Sterigenics®
A Sotera Health company

January 28, 2022

Mr. Mike Sundberg
New York State Department of Environmental Conservation
Office of Environmental Quality, Region 5
232 Hudson Street, Post Office Box 220
Warrensburg, New York 12885-0220

Regarding: Performance Test Report for Sterigenics - Queensbury
NYDEC Permit Number 5-5344-00029/00011

Dear Mr. Sundberg:

Enclosed is the report of the air pollution source testing of the ethylene oxide emission-control system located at the Sterigenics U.S. LLC facility located at 84 Park Road, Queensbury, New York. The test was conducted in accordance with 40 CFR Part 63, Subpart O – National Emissions Standard for Ethylene Oxide Emissions Standards for Sterilization Facilities as well as the current air permit.

Please contact me should you have any questions with regard to this letter or the attachments. You can reach me by phone: 630.928.1724.

Kind Regards,

Laura Hartman

Laura Hartman
Environmental Health and Safety Manager

Enclosures: Air Pollution Source Testing Report

Pc: General Manager

REPORT OF
AIR POLLUTION SOURCE TESTING
OF AN ETHYLENE OXIDE EMISSION-CONTROL SYSTEM
OPERATED BY STERIGENICS U.S., LLC.
IN QUEENSBURY, NEW YORK
ON DECEMBER 10, 2021

Submitted to:

NEW YORK DEPARTMENT OF ENVIRONMENTAL CONSERVATION
P.O. Box 220
232 Hudson Street
Warrensburg, New York 12885-0220

Submitted by:

STERIGENICS US, LLC.
84 Park Road
Queensbury, New York 12804

NYDEC Permit Number 5-5344-00029/00011

Prepared by:

ECSi
PO Box 1498
San Clemente, California 92674

Prepared on:

December 29, 2021

ECSi

CONTACT SUMMARY

CLIENT

Ms. Laura Hartman
Manager, Environmental Health and Safety
STERIGENICS US, LLC.
2015 Spring Road, Suite 650
Oak Brook, Illinois 60523

Phone: (630)928-1724
email: lhartman@sterigenics.com

FACILITY

Ms. Alicia Lempka
General Manager
STERIGENICS US, LLC.
84 Park Road
Queensbury, New York 12804

Phone: (518)743-9272
email: alempka@sterigenics.com

TEST DATE

December 10, 2021

REGULATORY AGENCY

Mr. Mike Sundberg
Environmental Engineer, Division of Air Resources
NEW YORK DEPARTMENT OF ENVIRONMENTAL CONSERVATION
P.O. Box 220
232 Hudson Street
Warrensburg, New York 12885-0220

Phone: (518)623-1231
email: mrsundbe@gw.dec.state.ny.us

TESTING CONTRACTOR

Daniel P. Kremer
President
ECSi, Inc.
PO Box 1498
San Clemente, California 92674

Phone: (949)400-9145
email: dankremer@ecsi1.com

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1.0 INTRODUCTION

On Friday, December 10, 2021, ECSi performed air pollution source testing of an ethylene oxide (EtO) emission-control system operated by Sterigenics U.S., LLC. in Queensbury, New York. The control device tested is a Donaldson EtO Abator catalytic oxidizer, which is currently used to control emissions from eleven EtO sterilizer backvents and five aeration rooms/cells. The purpose of the testing program was to evaluate compliance with EPA requirements under the current National Emissions Standards for Hazardous Air Pollutants (NESHAP), and with the conditions established in the permit (Number 5-5344-00029/00011) granted to Sterigenics US, LLC. by the New York Department of Environmental Conservation (NYDEC).

2.0 EQUIPMENT

The EtO gas-sterilization system is comprised of eleven commercial sterilizers, all discharging through liquid-ring vacuum pumps to a packed-tower acid scrubber emission control device. In compliance with NYDEC and USEPA requirements, and all aeration room vents are discharged to a Donaldson EtO Abator catalytic oxidizer emission control device. In compliance with NYDEC requirements, all chamber exhaust vents ("backvents") are discharged to the same Donaldson EtO Abator catalytic oxidizer emission control device.

The gas-sterilization and emission-control equipment consists of the following:

- Eleven Gas Sterilizers, one 26-pallet chamber (3003 cubic feet), four 13-pallet (1333 cubic feet), four 8-pallet (two: 1155 cubic feet; two: 1200 cubic feet), and two 3-pallet (350 cubic feet) capacity, each comprised of a steam-heated sterilization chamber, a recirculating vacuum pump chamber evacuation system, a chamber backvent valve, and a fugitive emissions exhaust hood;

- Five Aeration Rooms, three 48-pallet (11,340 cubic feet), one 685-pallet (189,642 cubic feet), and one 3764 cubic feet capacity, each comprised of a heated aeration room and an aeration room exhaust system.

Sterilizer vacuum pump emissions are controlled by:

- One Ceilcote packed tower acid scrubber, Model SPT-42-120, equipped with a bed of No. 1 Tellerette packing, a 5000-gallon reaction tank/reservoir, a secondary 5000-gallon reaction tank, a scrubber fluid recirculation system, and an exhaust blower.

Sterilizer backvent and aeration emissions are controlled by:

- One Donaldson EtO Abator System, operated at approximately 6,000 SCFM, equipped with a prefilter, a steam heater, an exhaust gas heat exchanger, a reactive catalyst bed, and an exhaust blower.

3.0 TESTING

EtO source testing was conducted in accordance with the procedures outlined in CARB Method 431, the USEPA approved alternate method to the procedures listed in 40 CFR, Part 63.365, subpart O. EtO concentration measurement for each test run will be conducted simultaneously at the inlet and outlet of the catalytic oxidizer during chamber backvent, and during a one-hour interval of the 24-hour aeration process. A total of three chamber backvent test runs, and three one-hour aeration test runs, were performed.

During backvent and aeration testing, EtO concentration at the inlet and the outlet of the catalytic oxidizer were determined using direct source sample injection into the gas chromatograph (GC). All backvent and aeration testing was performed using freshly sterilized product. The testing program was conducted in accordance with the procedures outlined in the following sections.

4.0 RULE/COMPLIANCE REQUIREMENTS

The EtO gas-sterilization system at Sterigenics U.S., LLC. was tested to determine compliance with the current federal EPA National Emissions Standard for Hazardous Air Pollutants (NESHAP) for ethylene oxide, and with the requirements specified in the NYDEC Permit. The current testing was performed to demonstrate continued compliance with the following requirements:

- The emissions from the sterilization chamber exhaust vents (backvents) must be discharged to control equipment with an EtO emission-reduction efficiency of at least 99.0% by weight.

- The emissions from the aeration process must be discharged to control equipment with an EtO emission-reduction efficiency of at least 99.0% by weight, or which reduces the EtO concentration at the emission-control outlet to less than 1 ppm.

Testing is required to demonstrate compliance with these requirements. Source testing of the emission-control device is conducted annually.

5.0 TEST METHOD REFERENCE

5.1 INTRODUCTION

EtO source testing was conducted in accordance with the procedures outlined in CARB Method 431, the USEPA approved alternate method to the procedures listed in 40 CFR, Part 63.365, subpart O. EtO concentration measurement for each test run will be conducted simultaneously at the inlet and outlet of the catalytic oxidizer during chamber backvent, and during a one-hour interval of the 24-hour aeration process. A total of three chamber backvent test runs, and three one-hour aeration test runs, were performed.

During backvent and aeration testing, EtO concentration at the inlet and the outlet of the catalytic oxidizer were determined using direct source sample injection into the gas chromatograph (GC). All backvent and aeration testing was performed using freshly sterilized product.

Operation and documentation of process conditions were performed by personnel from Sterigenics using existing monitoring instruments installed by the manufacturer on the equipment to be tested. In accordance with USEPA CFR40, Part 63.364 (c), catalyst bed temperature was recorded, using the lone thermocouple installed by the equipment manufacturer to display the average/representative temperature immediately downstream of the bank of catalyst trays.

5.2 CONTROL EFFICIENCY MEASUREMENT

During backvent and aeration testing, EtO concentration at the inlet and outlet of the catalytic oxidizer were determined using direct source sample injection into the GC. Since the source gas flow is identical at the inlet and outlet of the catalytic oxidizer control-efficiency of EtO during aeration and backvent was calculated by comparing the concentration of EtO vented to the system inlet to the concentration of EtO vented from the system outlet.

CARB Method 431, Appendix A, specifies that catalytic oxidizer emission-control devices may be tested, and control efficiency determined, without volumetric flow measurement as long as the following criteria are met:

1) There is no dilution between the inlet and outlet sampling locations

2) There is identical flow at the inlet and outlet sampling locations, and
3) There is constant flow throughout the duration of the compliance test.

These conditions were all met during the testing performed at Sterigenics. Specifically, condition 2 was met due to the extremely high flow rate of ambient air being drawn through the oxidizer (6,000 CFM) which, along with the fact that the oxidizer is heated using steam coils, renders the potential contribution of any fuel gas combustion products to the outlet flow rate to be insignificant.

During the backvent and aeration phases, vented gas was analyzed by an SRI, Model 8610, portable gas chromatograph (GC), equipped with the following: dual, heated sample loops and injectors; dual columns; and dual detectors. A flame ionization detector (FID) was used to quantify inlet EtO concentration, and a photoionization detector (PID) was used to quantify low-level EtO concentration at the emission-control device outlet.

5.3 SAMPLE TRANSPORT

Source gas was pumped to the GC at approximately 1000 cubic centimeters per minute (cc/min) from the sampling ports through two lengths of Teflon® sample line, each with a nominal volume of approximately 75 cubic centimeters (cc) and an outer diameter of 0.25 inch. At the inlet, the sampling port was located in the common backvent/aeration discharge duct, upstream of the oxidizer. At the outlet of the catalytic oxidizer, sampling ports were located in the exhaust stack downstream of the catalyst bed.

5.4 GC INJECTION

Source-gas samples were then injected into the GC which was equipped with two heated sampling loops, each containing a volume of approximately 2cc and maintained at 100 degrees Celsius (C). Injections occurred at approximately five-minute intervals during the aeration-phase testing. Helium was the carrier gas for both the FID and PID.

5.5 GC CONDITIONS

The packed columns for the GC were both operated at 90 degrees C. The columns were stainless steel, 6 feet long, 0.125-inch outer diameter, packed with 1 percent SP-1000 on 60/80 mesh Carbopack B. During the analysis, the FID was operated at 250 degrees C. The support gases for the FID were helium (99.999%

pure), hydrogen (99.995% pure) and air (99.9999% pure). Any unused sample gas was vented from the GC system back to the inlet of the control device being tested.

5.6 CALIBRATION STANDARDS

The FID was calibrated for mid-range part-per-million-by-volume (ppmv) level analysis using gas proportions similar to the following:

1) 100 ppmv EtO, balance nitrogen
2) 50 ppmv EtO, balance nitrogen (audit gas)
3) 10 ppmv EtO, balance nitrogen
4) 1 ppmv EtO, balance nitrogen

The PID was calibrated for low-range ppmv level analyses using gas proportions similar to the following:

1) 100 ppmv EtO, balance nitrogen
2) 50 ppmv EtO, balance nitrogen (audit gas)
3) 10 ppmv EtO, balance nitrogen
4) 1 ppmv EtO, balance nitrogen

Each of these calibration standards was in a separate, certified manufacturer's cylinder. Copies of the calibration gas laboratory certificates are attached as Appendix H.

5.7 SAMPLING DURATION

Backvent testing was performed in conjunction with normal production operations, during the chamber exhaust venting which is conducted for each sterilization chamber upon conclusion of the sterilization cycle, immediately prior to and during chamber unloading. Backvent sampling duration was 15 minutes for each of the three test runs.

Since aeration is a 24-hour process at this facility, with constant discharge flow from the aeration chambers to the emission-control system, aeration testing consisted of three 1-hour test runs. Each test run was performed with freshly sterilized product in the aeration chambers.

5.8 CONTROL-EFFICIENCY CALCULATIONS

Control efficiency of EtO was calculated for aeration and backvent, using the following CARB-approved equation:

Efficiency = $(C_i - C_o / C_i)(100)$

Which is a mathematical simplification of the following equation from CARB Method 431, with the identical inlet/outlet flow value removed:

Efficiency = $(W_i - W_o / W_i)(100)$

Where:

W_i = Mass flow rate to the control device inlet, pounds, calculated as $(C_i)(F_i)$

Where:

C_i = EtO concentration at the control device inlet

F_i = Flow rate at the control device inlet

W_o = Mass flow rate from the control device outlet, pounds, calculated as $(C_o)(F_o)$

Where:

C_o = EtO concentration at the control device outlet

F_o = Flow rate at the control device outlet

Results of the control-efficiency testing are presented in Section 8.0, and in Tables 1 and 2.

6.0 TEST SCENARIO

The backvent and aeration testing was performed during normal process load conditions. Three backvent and three aeration test runs were conducted in series to verify the performance of the emission-control device. The testing schedule was as follows:

1) Testing equipment was set up and calibrated.
2) Backvent Phase Test Run #1 was conducted with one freshly sterilized production load. Sampling was performed at the inlet and the outlet of the catalytic oxidizer.
3) Aeration Phase Test Run #1 was conducted with freshly sterilized product in aeration. Sampling was performed at the inlet and the outlet of the catalytic oxidizer.
4) Backvent Phase Test Run #2 was conducted with one freshly sterilized production load. Sampling was performed at the inlet and the outlet of the catalytic oxidizer.
5) Backvent Phase Test Run #3 was conducted with freshly sterilized product in aeration. Sampling was performed at the inlet and the outlet of the catalytic oxidizer.
6) Aeration Phase Test Run #2 was conducted with one freshly sterilized production load. Sampling was performed at the inlet and the outlet of the catalytic oxidizer.
7) Aeration Phase Test Run #3 was conducted with freshly sterilized product in aeration. Sampling was performed at the inlet and the outlet of the catalytic oxidizer.
8) Post calibration check was performed, testing equipment was packed.

7.0 QA/QC

7.1 FIELD TESTING QUALITY ASSURANCE

At the beginning of the test, the sampling system was leak checked at a vacuum of 15 inches of mercury. The sampling system was considered leak free when the flow indicated by the rotameters fell to zero.

At the beginning of the test, a system blank was analyzed to ensure that the sampling system was free of EtO. Ambient air was introduced at the end of the sample line and drawn through the sampling system line to the GC for analysis. The resulting chromatogram also provided a background level for non-EtO components (i.e. ambient air, carbon dioxide, water vapor) which are present in the source gas stream due to the ambient dilution air which is drawn into the emission-control device, and due to the destruction of EtO by the emission-control device which produces carbon dioxide and water vapor. This chromatogram, designated AMB, is included with the calibration data in Appendix A.

7.2 CALIBRATION PROCEDURES

The GC system was calibrated prior to testing. The pre-test calibration procedure included triplicate injections of each concentration of calibration gas, for each detector. The lowest concentration of calibration gas was injected 7-10 times for the detector used at the outlet sampling point, as part of the method detection limit (MDL) determination for the test. The MDL calculations were performed using a spreadsheet provided to ECSi by Ned Shappley of the USEPA Measurement Technology Group, in accordance with USEPA Method 301. The resulting calibration data was entered into the Peaksimple II analytical software, and a calibration curve for the test was established for each detector.

A gas cylinder of similar composition as the calibration gases, but certified by a separate supplier, was used to verify calibration gas composition and GC performance (audit gas). This gas was used as a calibration check at the test's midpoint, and at the test's conclusion, to verify that the Peaksimple calibration curve for each detector was still accurate within 10% of the mean values established in the multipoint calibration.

All calibration gases and support gases used were of the highest purity and quality available. A copy of the laboratory certification for each calibration gas is attached as Appendix H.

8.0 TEST RESULTS

The catalytic oxidizer was found to have an average EtO control efficiency of 99.77 percent for backvent, and an average EtO control efficiency of 99.87 percent for aeration. In accordance with state and federal requirements, backvent and aeration discharge streams must be vented to control equipment with an EtO emission-reduction efficiency of at least 99 percent by weight. The catalytic oxidizer met this requirement.

The test results are summarized in Tables 1 and 2. These tables include results for EtO control efficiency of the emission-control device. Chromatograms and chromatographic supporting data are attached as Appendices A through G.

TABLES

TABLE 1
ETHYLENE OXIDE CONTROL EFFICIENCY - BACKVENT
OF AN ETHYLENE OXIDE EMISSION CONTROL DEVICE
OPERATED BY STERIGENICS U.S., LLC.
IN QUEENSBURY, NEW YORK
ON DECEMBER 10, 2021

RUN NUMBER	INJECTION TIME	INLET ETO CONC. (PPM)(1)	OUTLET ETO CONC. (PPM)(2)	ETO CONTROL EFFICIENCY
1(3)	908	140	1.12	99.2000
1	909	62.8	0.398	99.3662
1	910	46.5	0.0146	99.9686
1	911	42.9	0.0146	99.9660
1	912	39.6	0.0146	99.9631
1	914	39.2	0.166	99.5765
1	915	39.7	0.0146	99.9632
1	916	37.5	0.0146	99.9611
1	917	37.0	0.0146	99.9605
1	918	37.2	0.0146	99.9608
1	919	37.8	0.164	99.5661
1	921	36.5	0.0146	99.9600
2(4)	1034	129	0.845	99.3450
2	1035	51.6	0.242	99.5310
2	1036	42.8	0.125	99.7079
2	1037	41.2	0.160	99.6117
2	1039	41.3	0.215	99.4794
2	1040	41.0	0.138	99.6634
2	1041	40.7	0.102	99.7494
2	1043	40.9	0.131	99.6797
2	1044	39.5	0.0782	99.8020
2	1045	34.8	0.0146	99.9580
2	1047	31.0	0.0146	99.9529
2	1048	28.1	0.0146	99.9480
3(5)	1053	95.3	0.0146	99.9847
3	1054	81.5	0.199	99.7558
3	1055	44.5	0.137	99.6921
3	1056	36.2	0.0146	99.9597
3	1057	41.4	0.175	99.5773
3	1059	39.0	0.0146	99.9626
3	1100	38.7	0.0381	99.9016
3	1102	38.5	0.0146	99.9621
3	1103	38.2	0.0593	99.8448
3	1104	38.5	0.0146	99.9621
3	1106	94.1	0.329	99.6504
3	1107	61.2	0.132	99.7843
TIME-WEIGHTED AVERAGE:		**50.16**	**0.1441**	**99.77**
		NYDEQ REQUIRED CONTROL EFFICIENCY:		**99%**

Notes:
(1) - PPM = parts per million by volume
(2) - 0.0146 ppm is the quantification limit for the detector used at the outlet.
(3) - Backvent Phase Test Run #1 started at 09:07, ended at 09:22.
(4) - Backvent Phase Test Run #2 started at 10:33, ended at 10:48.
(5) - Backvent Phase Test Run #3 started at 10:52, ended at 11:07.
(6) - During backvent testing, the average recorded catalyst bed temperature was 295 deg F

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TABLE 2
ETHYLENE OXIDE CONTROL EFFICIENCY - AERATION
OF AN ETHYLENE OXIDE EMISSION CONTROL DEVICE
OPERATED BY STERIGENICS U.S., LLC.
IN QUEENSBURY, NEW YORK
ON DECEMBER 10, 2021

RUN NUMBER	INJECTION TIME	INLET ETO CONC. (PPM)(1)	OUTLET ETO CONC. (PPM)(2)	ETO CONTROL EFFICIENCY
1(3)	924	36.3	0.189	99.4793
1	929	34.0	0.0146	99.9571
1	934	32.9	0.0146	99.9556
1	939	32.9	0.0269	99.9182
1	944	32.3	0.0146	99.9548
1	949	31.6	0.0146	99.9538
1	954	30.2	0.0146	99.9517
1	959	30.4	0.0146	99.9520
1	1004	31.6	0.0146	99.9538
1	1009	31.4	0.0146	99.9535
1	1014	31.5	0.0146	99.9537
1	1019	31.3	0.0146	99.9534
2(4)	1109	44.6	0.141	99.6839
2	1114	43.4	0.0146	99.9664
2	1119	40.8	0.0686	99.8319
2	1124	30.8	0.0146	99.9526
2	1129	29.5	0.0146	99.9505
2	1134	29.6	0.290	99.0203
2	1139	29.8	0.134	99.5503
2	1144	33.6	0.0146	99.9565
2	1149	34.0	0.0146	99.9571
2	1154	34.5	0.142	99.5884
2	1159	31.1	0.0146	99.9531
2	1204	54.4	0.135	99.7518
3(5)	1209	40.2	0.0376	99.9065
3	1214	36.6	0.0150	99.9590
3	1219	33.4	0.0146	99.9563
3	1224	31.0	0.0146	99.9529
3	1229	30.2	0.0146	99.9517
3	1234	32.3	0.0146	99.9548
3	1239	32.1	0.0146	99.9545
3	1244	33.0	0.0840	99.7455
3	1249	33.3	0.0146	99.9562
3	1254	33.6	0.0146	99.9565
3	1259	33.2	0.0146	99.9560
3	1304	34.2	0.0146	99.9573
TIME-WEIGHTED AVERAGE:		**34.04**	**0.0452**	**99.87**
			NYDEQ REQUIRED CONTROL EFFICIENCY:	**99%**

Notes:
(1) - PPM = parts per million by volume
(2) - 0.0146 ppm is the quantification limit for the detector used at the outlet.
(3) - Aeration Phase Test Run #1 started at 09:22, ended at 10:22.
(4) - Aeration Phase Test Run #2 started at 11:07, ended at 12:07.
(5) - Aeration Phase Test Run #3 started at 12:07, ended at 13:07.
(6) - During aeration testing, the average recorded catalyst bed temperature was 293 deg F

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APPENDICES

APPENDIX A

Calibration Data

USEPA Detection Limit Calculation

Sterigenics - Queensbury, NY

12/10/2021

Step 1 : Prepare and analyze at least seven standards prepared at or near the estimated detection limit

Step 2 : Record and calculate the standard deviation of the replicate measurements.

EtO Std Conc. (ppm): 1.08

Analysis Number	1	2	3	4	5	6	7	8	9	10
Result	20.32	20.34	20.14	20.18	20.20	20.29	20.36			

Calculated Standard Deviation = 0.0869 Average: 20.26

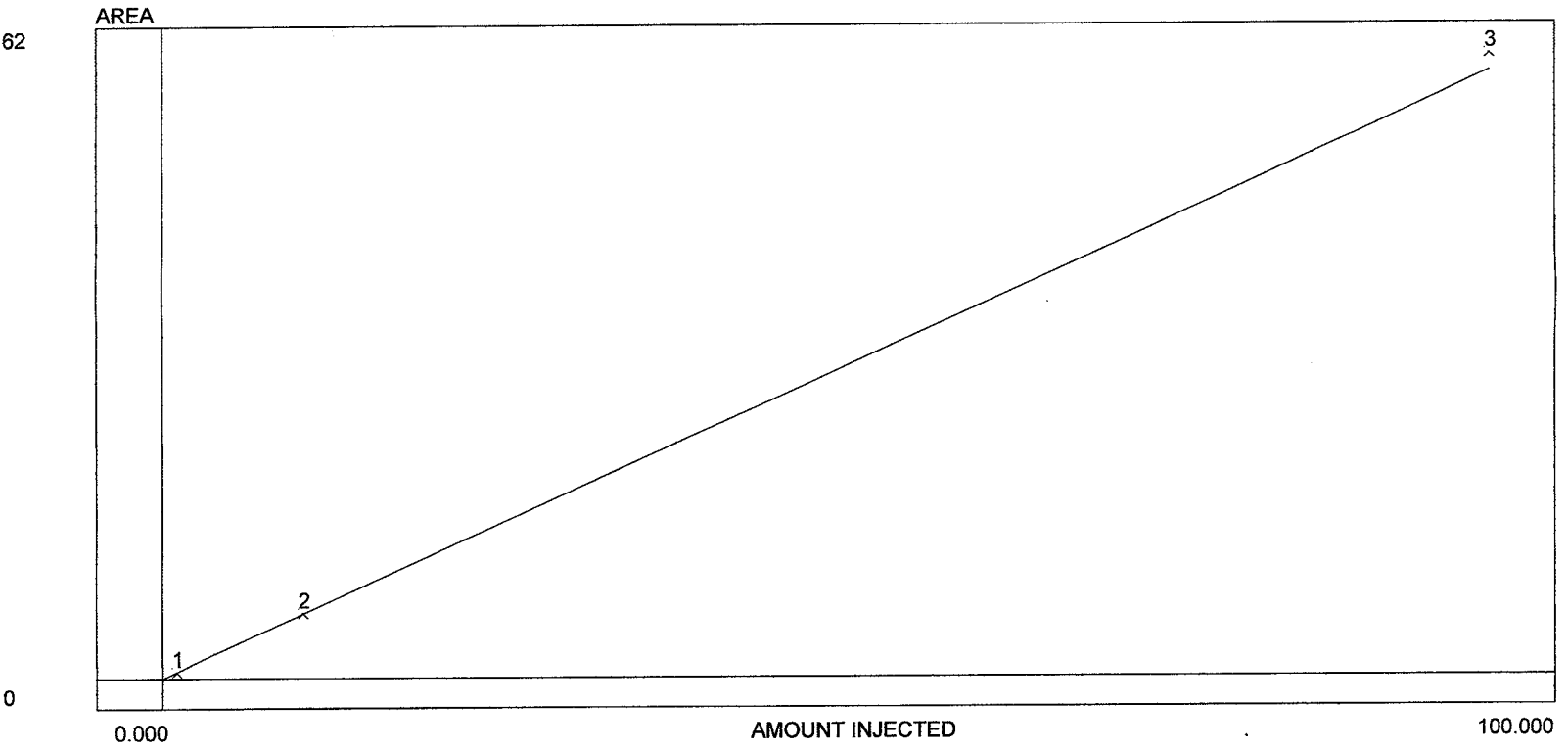
Step 3 : Determine the Method Detection Limit (MDL) by mulitplying the student T value appropriate for 99% confidence level and the standard deviation estimate with in n-1 degrees of freedom

Number of Replicates	7	8	9	10
T-values	3.143	2.998	2.896	2.821

Method Detection Limit (as peak area): = 0.2731

Method Detection Limit (as concentration): = **0.0146 ppm EtO**

Calibration file: C:\peak454-64bitWin10\1SterQ2021.CAL



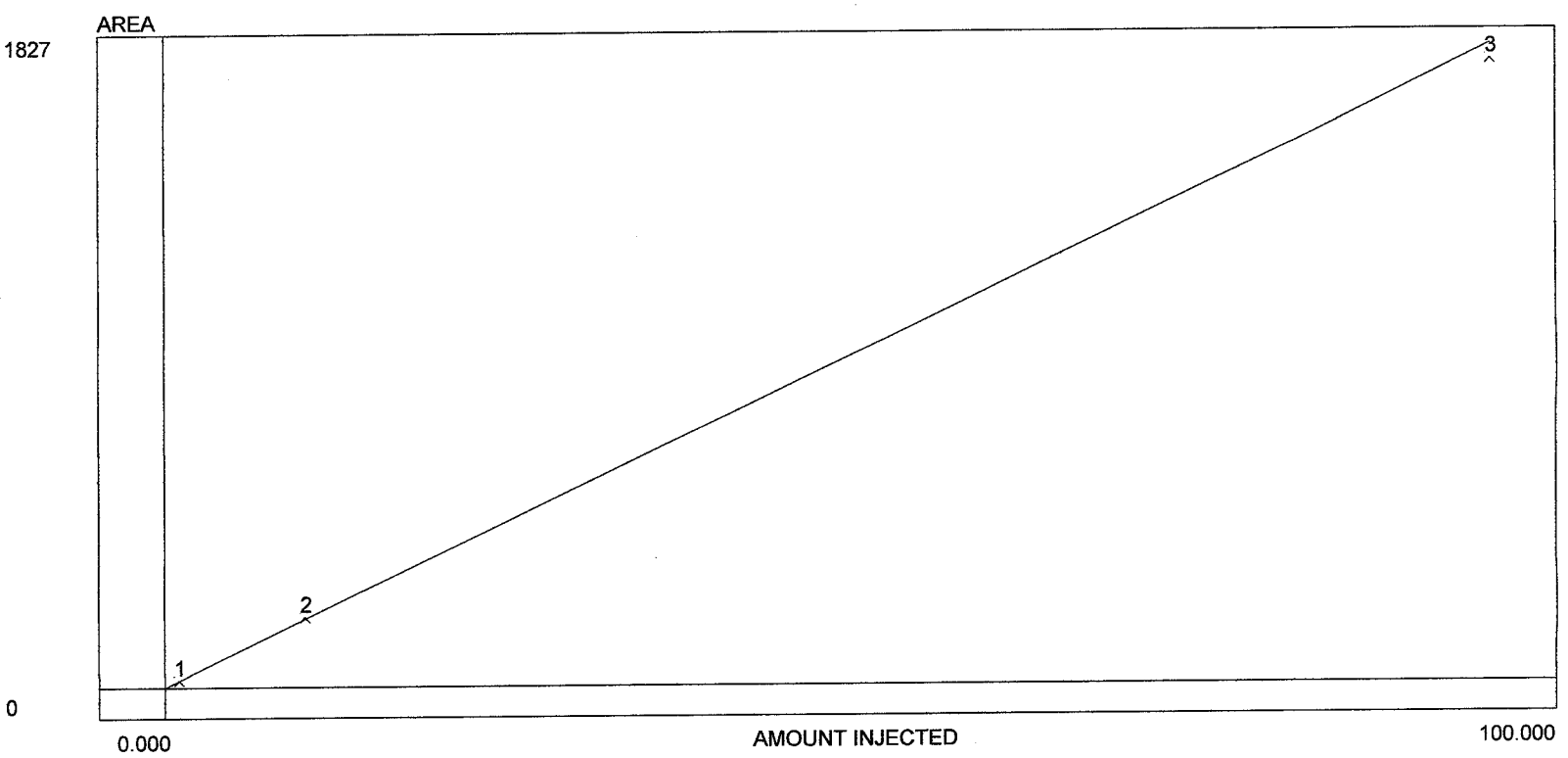
Avg slope of curve: 0.60
Y-axis intercept: -0.00
Linearity: 1.00
Number of levels: 3
SD/rel SD of CF's: 0.0/3.3
Y=0.6006X
r2: 1.0000
Last calibrated: Fri Dec 10 08:11:27 2021

Lvl.	Area/ht.	Amount	CF	Current	Previous #1	Previous #2
1	0.625	1.080	0.578	0.625	N/A	N/A
2	6.423	10.600	0.606	6.423	N/A	N/A
3	61.730	100.000	0.617	61.730	N/A	N/A

Component file: eto2-100.cpt

Peak	Name	Start	End	Calibration	Int.Std	Units
1	Dead Vol / Air	0.000	0.280		0.000	
2	Ambient H2O	0.280	0.480		0.000	
3	Ethylene Oxide	0.480	0.590	C:\peak454-64bit\0.000\2Sppm2021.CAL		
4	Acetaldehyde	0.590	1.000		0.000	

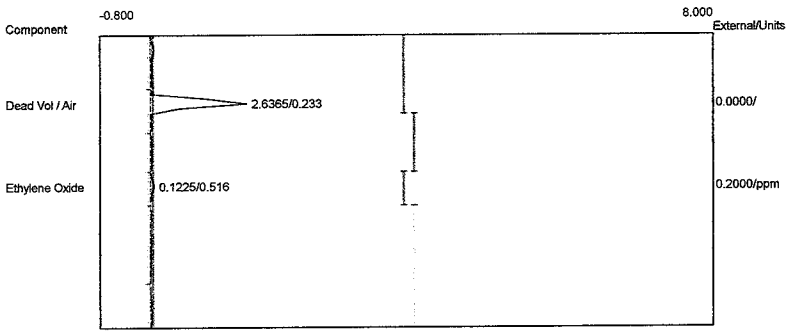
Calibration file: C:\peak454-64bitWin10\2SterQ2021.CAL



Avg slope of curve: 18.73
Y-axis intercept: -0.00
Linearity: 1.00
Number of levels: 3
SD/rel SD of CF's: 0.4/2.4
Y=18.7267X
r2: 1.0000
Last calibrated: Fri Dec 10 08:10:33 2021

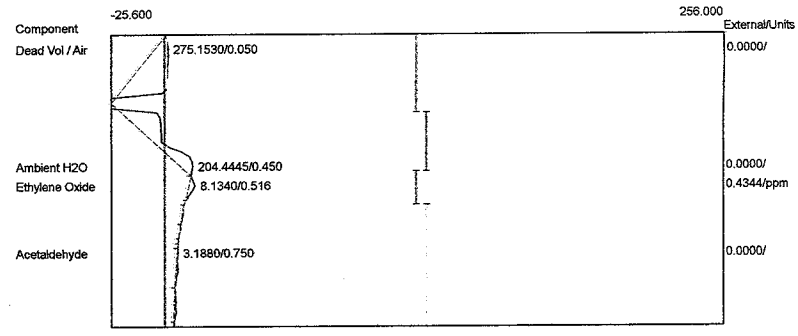
Lvl.	Area/ht.	Amount	CF	Current	Previous #1	Previous #2
1	20.260	1.080	18.759	20.260	N/A	N/A
2	203.000	10.600	19.151	203.000	N/A	N/A
3	1827.000	100.000	18.270	1827.000	N/A	N/A

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: PreCal
Analysis date: 12/10/2021 07:01:39
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-Amb.CHR (c:\peak359)
Sample: Ambient Background
Operator: D. Kremer



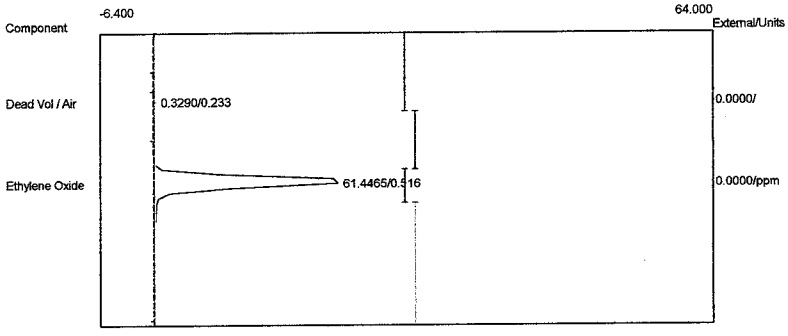
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.6365	0.0000	
Ethylene Oxide	0.516	0.1225	0.2000	ppm
		2.7590	0.2000	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: PreCal
Analysis date: 12/10/2021 07:01:39
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-Amb.CHR (c:\peak359)
Sample: Ambient Background
Operator: D. Kremer



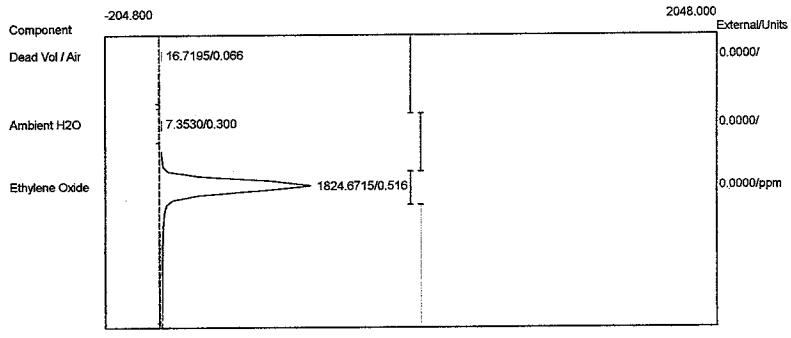
Component	Retention	Area	External	Units
Dead Vol / Air	0.050	275.1530	0.0000	
Ambient H2O	0.450	204.4445	0.0000	
Ethylene Oxide	0.516	8.1340	0.4344	ppm
Acetaldehyde	0.750	3.1880	0.0000	
		490.9195	0.4344	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: PreCal
Analysis date: 12/10/2021 07:06:29
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-C01.CHR (c:\peak359)
Sample: 100 ppm EtO std
Operator: D. Kremer



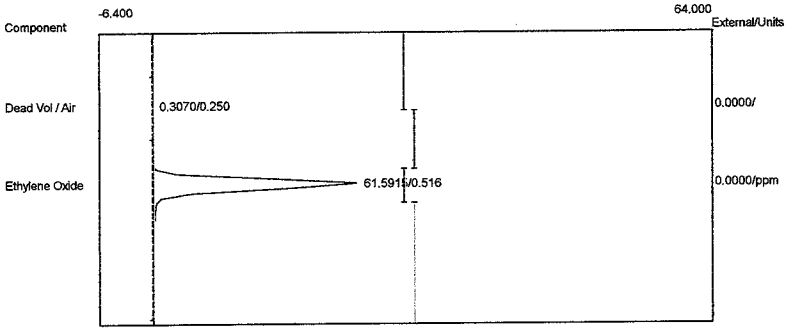
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	0.3290	0.0000	
Ethylene Oxide	0.516	61.4465	0.0000	ppm
		61.7755	0.0000	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: PreCal
Analysis date: 12/10/2021 07:06:29
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-C01.CHR (c:\peak359)
Sample: 100 ppm EtO std
Operator: D. Kremer



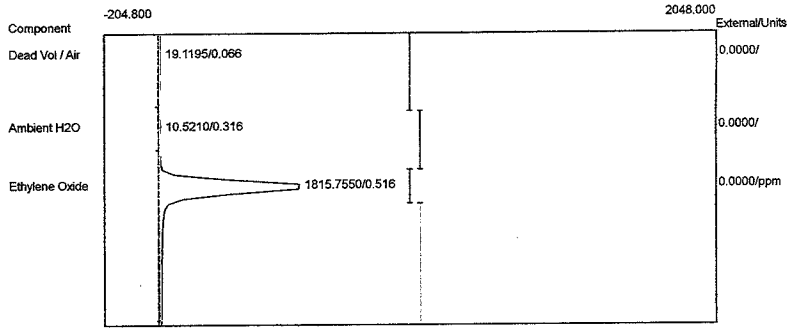
Component	Retention	Area	External	Units
Dead Vol / Air	0.066	16.7195	0.0000	
Ambient H2O	0.300	7.3530	0.0000	
Ethylene Oxide	0.516	1824.6715	0.0000	ppm
		1848.7440	0.0000	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: PreCal
Analysis date: 12/10/2021 07:08:49
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-C02.CHR (c:\peak359)
Sample: 100 ppm EtO std
Operator: D. Kremer



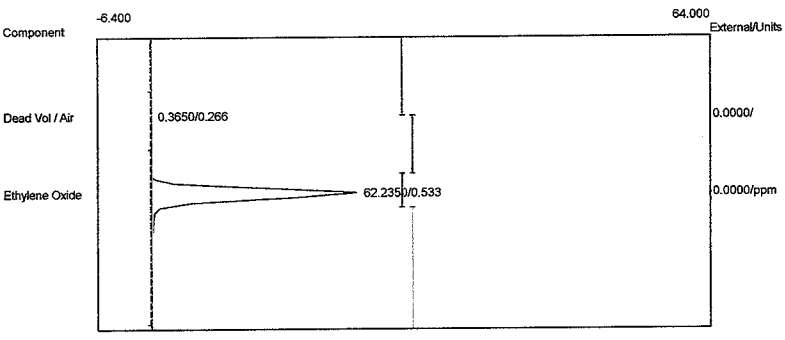
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	0.3070	0.0000	
Ethylene Oxide	0.516	61.5915	0.0000	ppm
		61.8985	0.0000	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: PreCal
Analysis date: 12/10/2021 07:08:49
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-C02.CHR (c:\peak359)
Sample: 100 ppm EtO std
Operator: D. Kremer



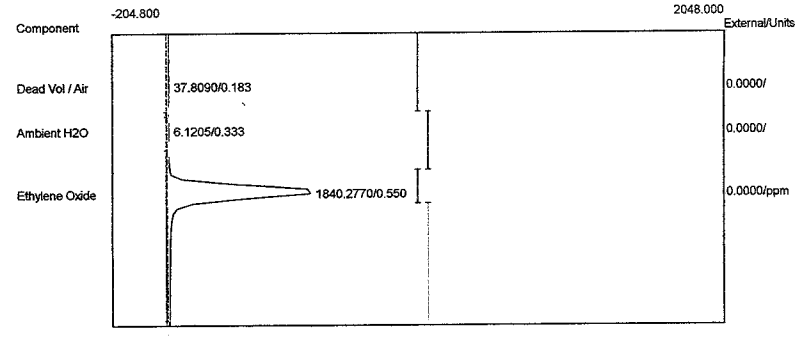
Component	Retention	Area	External	Units
Dead Vol / Air	0.066	19.1195	0.0000	
Ambient H2O	0.316	10.5210	0.0000	
Ethylene Oxide	0.516	1815.7550	0.0000	ppm
		1845.3955	0.0000	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: PreCal
Analysis date: 12/10/2021 07:10:18
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-C03.CHR (c:\peak359)
Sample: 100 ppm EtO std
Operator: D. Kremer



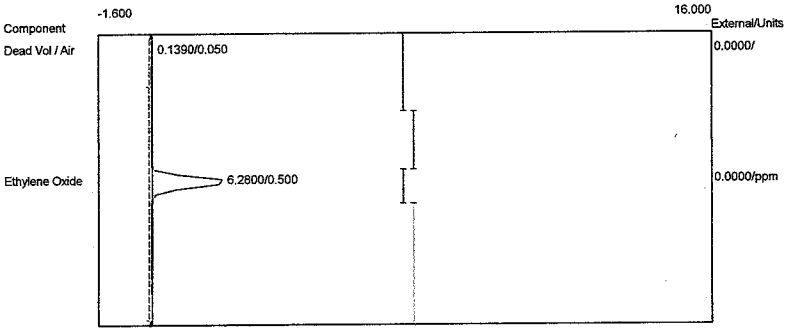
Component	Retention	Area	External	Units
Dead Vol / Air	0.266	0.3650	0.0000	
Ethylene Oxide	0.533	62.2350	0.0000	ppm
		62.6000	0.0000	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: PreCal
Analysis date: 12/10/2021 07:10:18
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-C03.CHR (c:\peak359)
Sample: 100 ppm EtO std
Operator: D. Kremer



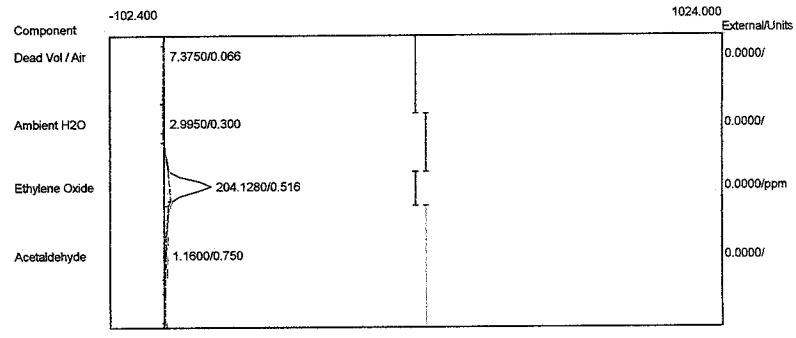
Component	Retention	Area	External	Units
Dead Vol / Air	0.183	37.8090	0.0000	
Ambient H2O	0.333	6.1205	0.0000	
Ethylene Oxide	0.550	1840.2770	0.0000	ppm
		1884.2065	0.0000	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: PreCal
Analysis date: 12/10/2021 07:12:19
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-C04.CHR (c:\peak359)
Sample: 10.6 ppm EtO std
Operator: D. Kremer



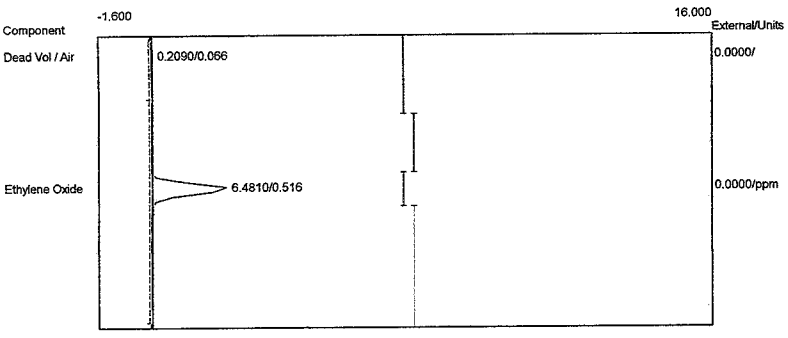
Component	Retention	Area	External	Units
Dead Vol / Air	0.050	0.1390	0.0000	
Ethylene Oxide	0.500	6.2800	0.0000	ppm
		6.4190	0.0000	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: PreCal
Analysis date: 12/10/2021 07:12:19
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-C04.CHR (c:\peak359)
Sample: 10.6 ppm EtO std
Operator: D. Kremer



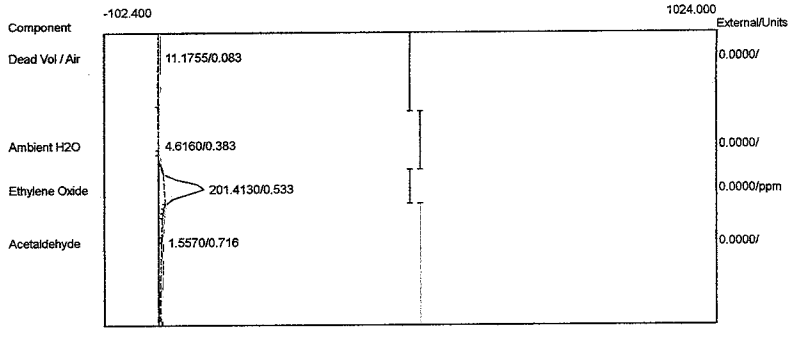
Component	Retention	Area	External	Units
Dead Vol / Air	0.066	7.3750	0.0000	
Ambient H2O	0.300	2.9950	0.0000	
Ethylene Oxide	0.516	204.1280	0.0000	ppm
Acetaldehyde	0.750	1.1600	0.0000	
		215.6580	0.0000	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: PreCal
Analysis date: 12/10/2021 07:16:54
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-C05.CHR (c:\peak359)
Sample: 10.6 ppm EtO std
Operator: D. Kremer



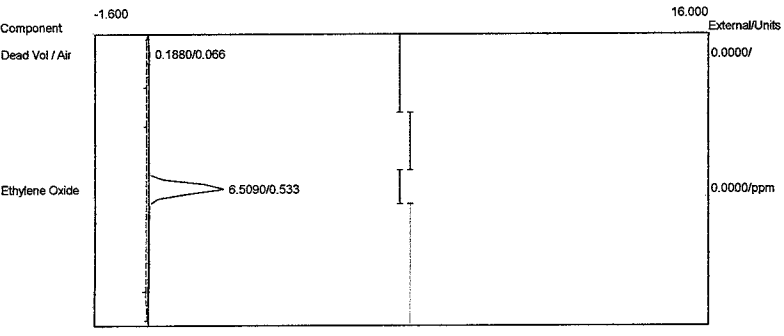
Component	Retention	Area	External	Units
Dead Vol / Air	0.066	0.2090	0.0000	
Ethylene Oxide	0.516	6.4810	0.0000	ppm
		6.6900	0.0000	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: PreCal
Analysis date: 12/10/2021 07:16:54
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-C05.CHR (c:\peak359)
Sample: 10.6 ppm EtO std
Operator: D. Kremer



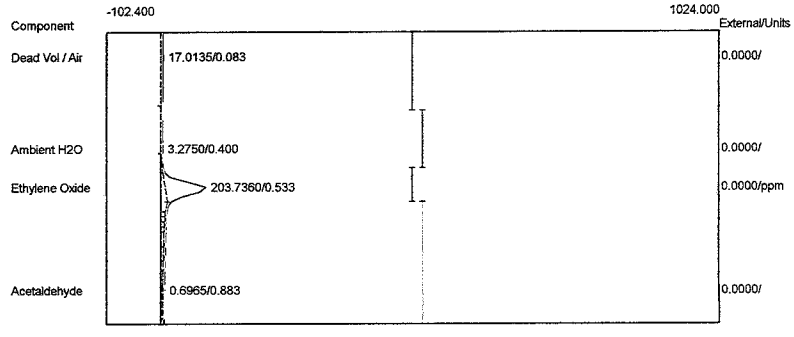
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	11.1755	0.0000	
Ambient H2O	0.383	4.6160	0.0000	
Ethylene Oxide	0.533	201.4130	0.0000	ppm
Acetaldehyde	0.716	1.5570	0.0000	
		218.7615	0.0000	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: PreCal
Analysis date: 12/10/2021 07:19:12
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-C06.CHR (c:\peak359)
Sample: 10.6 ppm EtO std
Operator: D. Kremer



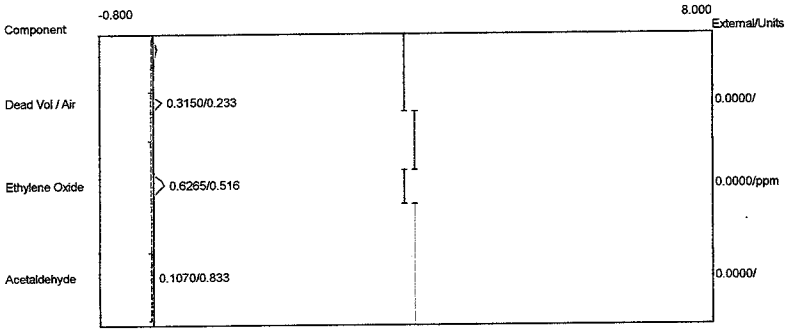
Component	Retention	Area	External	Units
Dead Vol / Air	0.066	0.1880	0.0000	
Ethylene Oxide	0.533	6.5090	0.0000	ppm
		6.6970	0.0000	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: PreCal
Analysis date: 12/10/2021 07:19:12
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-C06.CHR (c:\peak359)
Sample: 10.6 ppm EtO std
Operator: D. Kremer



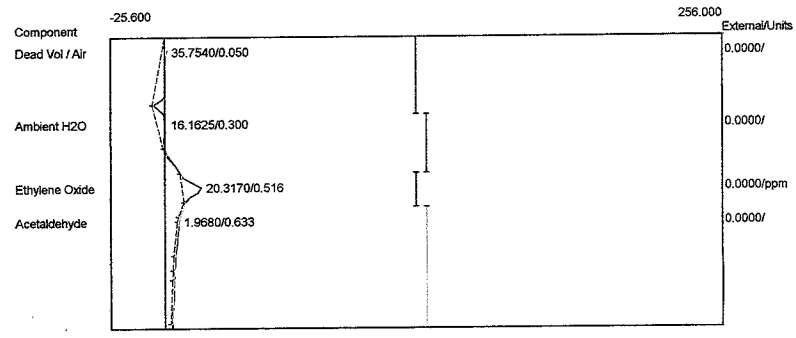
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	17.0135	0.0000	
Ambient H2O	0.400	3.2750	0.0000	
Ethylene Oxide	0.533	203.7360	0.0000	ppm
Acetaldehyde	0.883	0.6965	0.0000	
		224.7210	0.0000	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: PreCal
Analysis date: 12/10/2021 07:24:15
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-C07.CHR (c:\peak359)
Sample: 1.08 ppm EtO std
Operator: D. Kremer



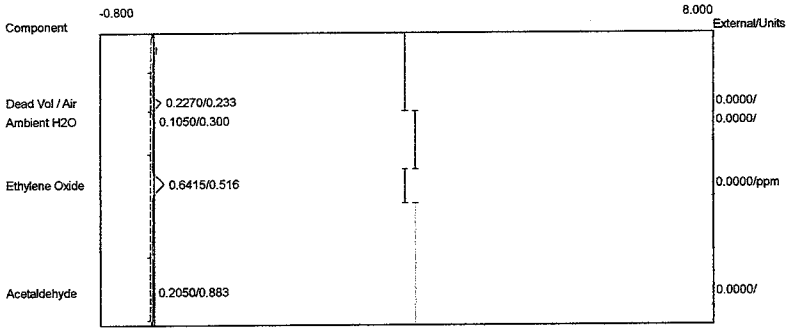
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	0.3150	0.0000	
Ethylene Oxide	0.516	0.6265	0.0000	ppm
Acetaldehyde	0.833	0.1070	0.0000	
		1.0485	0.0000	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: PreCal
Analysis date: 12/10/2021 07:24:15
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-C07.CHR (c:\peak359)
Sample: 1.08 ppm EtO std
Operator: D. Kremer



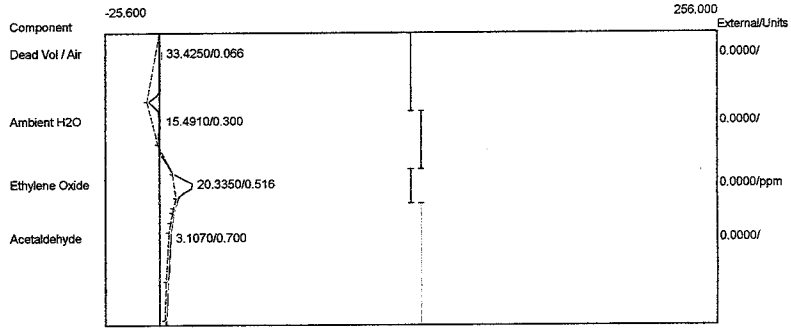
Component	Retention	Area	External	Units
Dead Vol / Air	0.050	35.7540	0.0000	
Ambient H2O	0.300	16.1625	0.0000	
Ethylene Oxide	0.516	20.3170	0.0000	ppm
Acetaldehyde	0.633	1.9680	0.0000	
		74.2015	0.0000	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: PreCal
Analysis date: 12/10/2021 07:30:05
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-C08.CHR (c:\peak359)
Sample: 1.08 ppm EtO std
Operator: D. Kremer



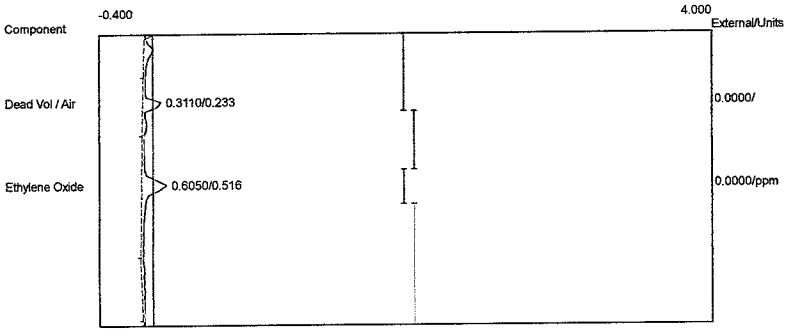
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	0.2270	0.0000	
Ambient H2O	0.300	0.1050	0.0000	
Ethylene Oxide	0.516	0.6415	0.0000	ppm
Acetaldehyde	0.883	0.2050	0.0000	
		1.1785	0.0000	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: PreCal
Analysis date: 12/10/2021 07:30:05
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-C08.CHR (c:\peak359)
Sample: 1.08 ppm EtO std
Operator: D. Kremer



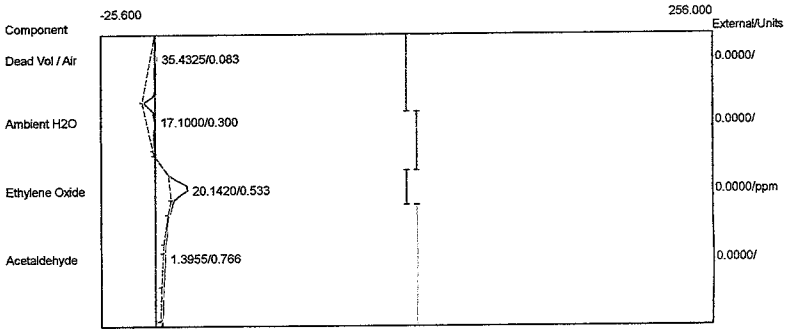
Component	Retention	Area	External	Units
Dead Vol / Air	0.066	33.4250	0.0000	
Ambient H2O	0.300	15.4910	0.0000	
Ethylene Oxide	0.516	20.3350	0.0000	ppm
Acetaldehyde	0.700	3.1070	0.0000	
		72.3580	0.0000	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: PreCal
Analysis date: 12/10/2021 07:33:36
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-C09.CHR (c:\peak359)
Sample: 1.08 ppm EtO std
Operator: D. Kremer



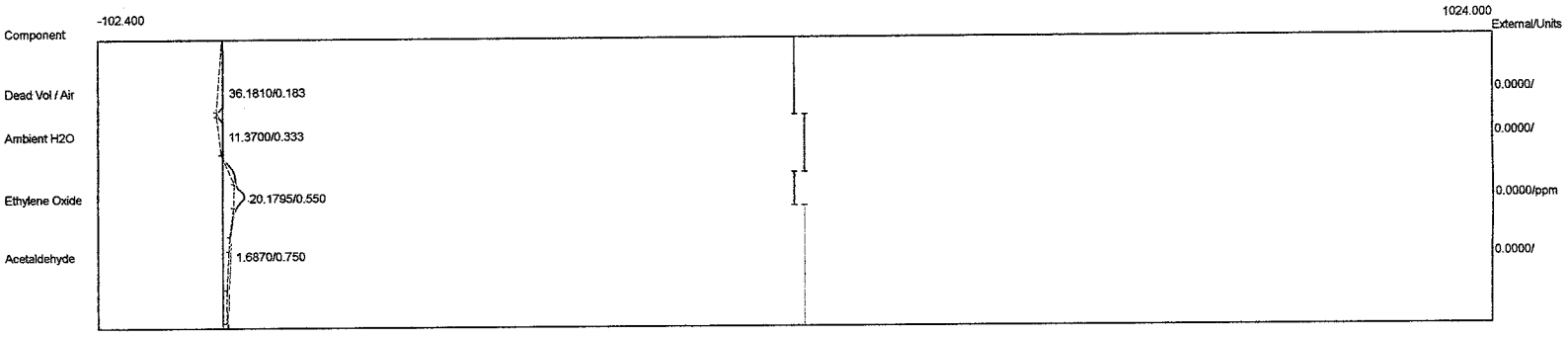
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	0.3110	0.0000	
Ethylene Oxide	0.516	0.6050	0.0000	ppm
		0.9160	0.0000	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: PreCal
Analysis date: 12/10/2021 07:33:36
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-C09.CHR (c:\peak359)
Sample: 1.08 ppm EtO std
Operator: D. Kremer



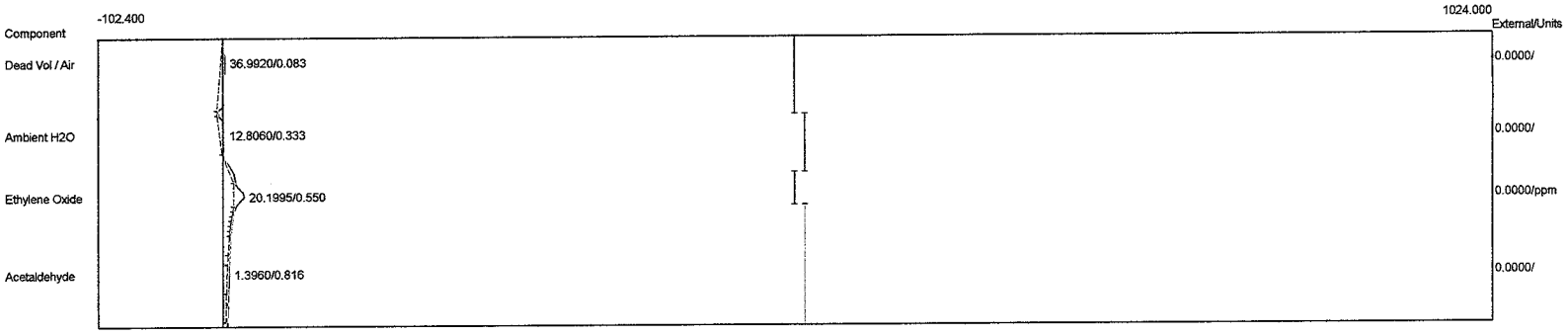
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	35.4325	0.0000	
Ambient H2O	0.300	17.1000	0.0000	
Ethylene Oxide	0.533	20.1420	0.0000	ppm
Acetaldehyde	0.766	1.3955	0.0000	
		74.0700	0.0000	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: PreCal
Analysis date: 12/10/2021 07:42:23
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-C10.CHR (c:\peak359)
Sample: 1.08 ppm EtO std
Operator: D. Kremer



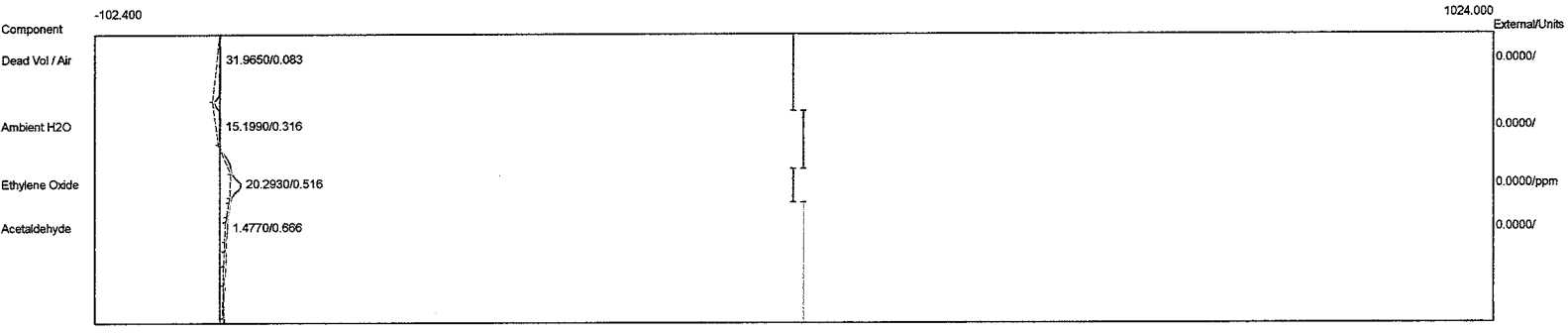
Component	Retention	Area	External	Units
Dead Vol / Air	0.183	36.1810	0.0000	
Ambient H2O	0.333	11.3700	0.0000	
Ethylene Oxide	0.550	20.1795	0.0000	ppm
Acetaldehyde	0.750	1.6870	0.0000	
		69.4175	0.0000	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: PreCal
Analysis date: 12/10/2021 07:44:28
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-C11.CHR (c:\peak359)
Sample: 1.08 ppm EtO std
Operator: D. Kremer



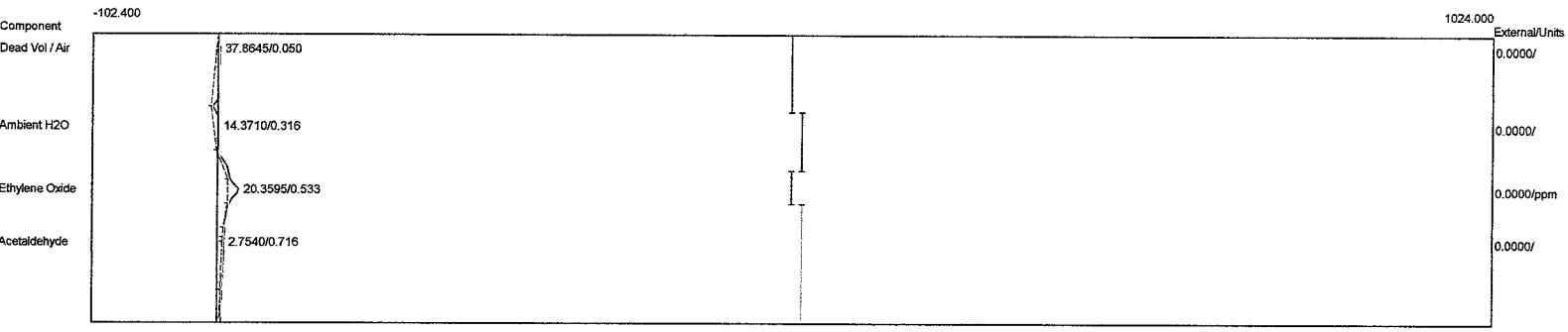
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	36.9920	0.0000	
Ambient H2O	0.333	12.8060	0.0000	
Ethylene Oxide	0.550	20.1995	0.0000	ppm
Acetaldehyde	0.816	1.3960	0.0000	
		71.3935	0.0000	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: PreCal
Analysis date: 12/10/2021 07:47:54
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-C12.CHR (c:\peak359)
Sample: 1.08 ppm EtO std
Operator: D. Kremer



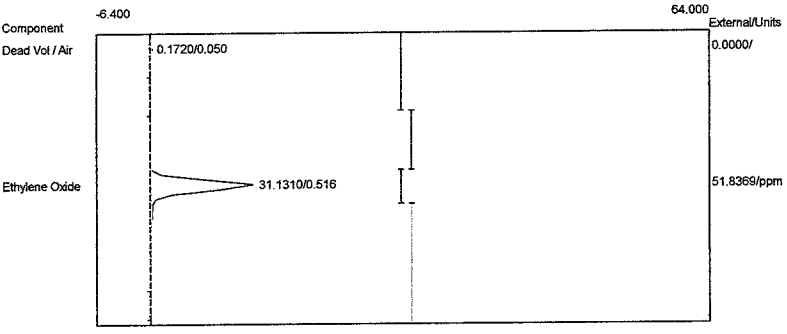
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	31.9650	0.0000	
Ambient H2O	0.316	15.1990	0.0000	
Ethylene Oxide	0.516	20.2930	0.0000	ppm
Acetaldehyde	0.666	1.4770	0.0000	
		68.9340	0.0000	

Lab name: ECSI
Client: Sterigenics - Queensbury
Client ID: PreCal
Analysis date: 12/10/2021 07:49:58
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-C13.CHR (c:\peak359)
Sample: 1.08 ppm EtO std
Operator: D. Kremer



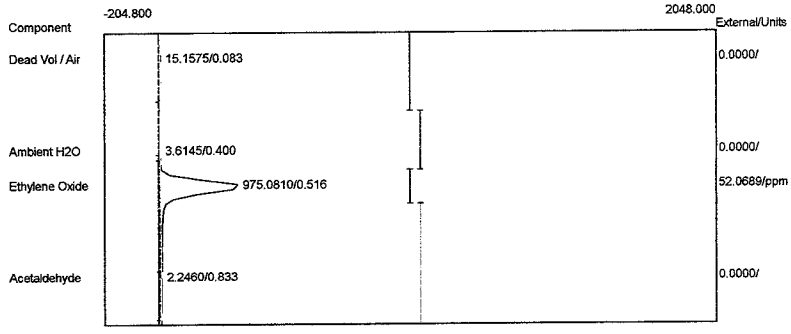
Component	Retention	Area	External	Units
Dead Vol / Air	0.050	37.8645	0.0000	
Ambient H2O	0.316	14.3710	0.0000	
Ethylene Oxide	0.533	20.3595	0.0000	ppm
Acetaldehyde	0.716	2.7540	0.0000	
		75.3490	0.0000	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: PreCal
Analysis date: 12/10/2021 08:07:19
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-C10.CHR (c:\peak359)
Sample: 52.0 ppm EtO std
Operator: D. Kremer



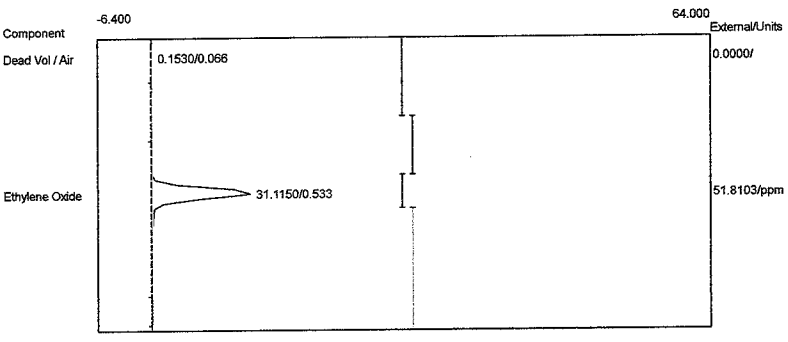
Component	Retention	Area	External	Units
Dead Vol / Air	0.050	0.1720	0.0000	
Ethylene Oxide	0.516	31.1310	51.8369	ppm
		31.3030	51.8369	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: PreCal
Analysis date: 12/10/2021 08:07:19
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-C14.CHR (c:\peak359)
Sample: 52.0 ppm EtO std
Operator: D. Kremer



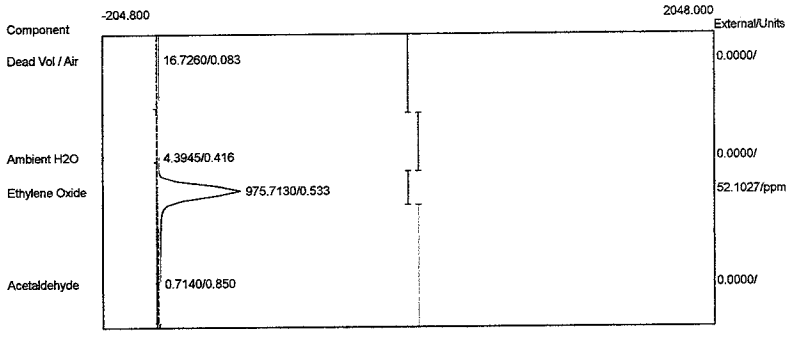
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	15.1575	0.0000	
Ambient H2O	0.400	3.6145	0.0000	
Ethylene Oxide	0.516	975.0810	52.0689	ppm
Acetaldehyde	0.833	2.2460	0.0000	
		996.0990	52.0689	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: PreCal
Analysis date: 12/10/2021 08:13:04
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-C11.CHR (c:\peak359)
Sample: 52.0 ppm EtO std
Operator: D. Kremer
Comments: Sample Line Bias Cal



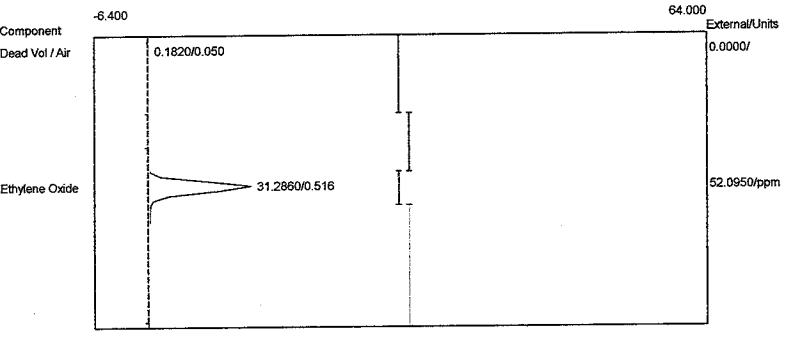
Component	Retention	Area	External	Units
Dead Vol / Air	0.066	0.1530	0.0000	
Ethylene Oxide	0.533	31.1150	51.8103	ppm
		31.2680	51.8103	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: PreCal
Analysis date: 12/10/2021 08:13:04
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-C15.CHR (c:\peak359)
Sample: 52.0 ppm EtO std
Operator: D. Kremer
Comments: Sample Line Bias Cal



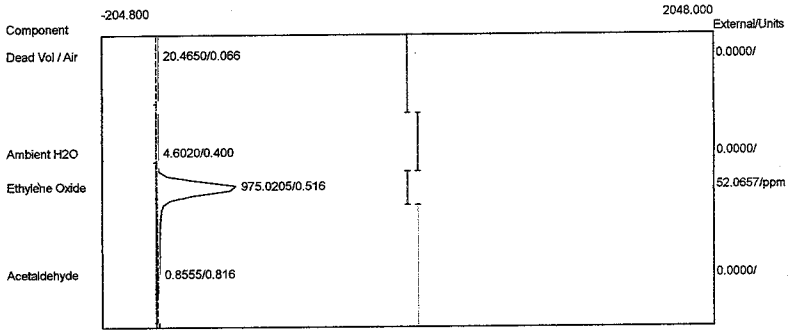
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	16.7260	0.0000	
Ambient H2O	0.416	4.3945	0.0000	
Ethylene Oxide	0.533	975.7130	52.1027	ppm
Acetaldehyde	0.850	0.7140	0.0000	
		997.5475	52.1027	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: PostCal
Analysis date: 12/10/2021 13:16:20
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-C12.CHR (c:\peak359)
Sample: 52.0 ppm EtO std
Operator: D. Kremer



Component	Retention	Area	External	Units
Dead Vol / Air	0.050	0.1820	0.0000	
Ethylene Oxide	0.516	31.2860	52.0950	ppm
		31.4680	52.0950	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: PostCal
Analysis date: 12/10/2021 13:16:20
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-C16.CHR (c:\peak359)
Sample: 52.0 ppm EtO std
Operator: D. Kremer

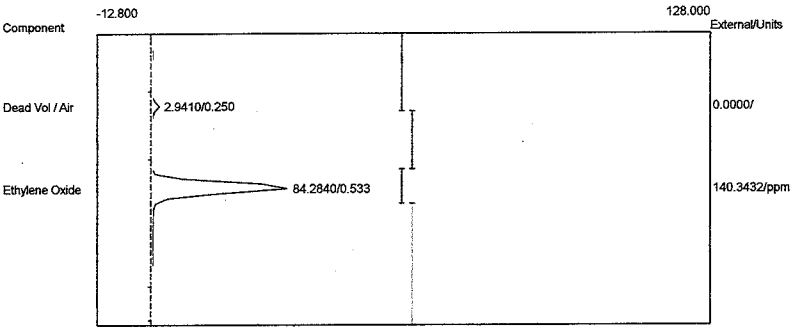


Component	Retention	Area	External	Units
Dead Vol / Air	0.066	20.4650	0.0000	
Ambient H2O	0.400	4.6020	0.0000	
Ethylene Oxide	0.516	975.0205	52.0657	ppm
Acetaldehyde	0.816	0.8555	0.0000	
		1000.9430	52.0657	

APPENDIX B

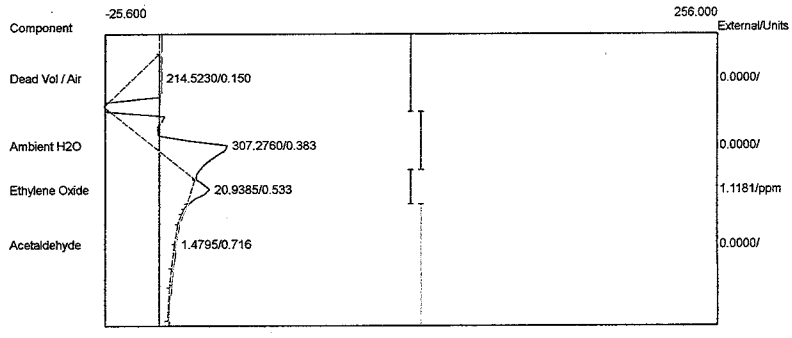
Run #1 Chromatograms – Backvent

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: BV-Run#1
Analysis date: 12/10/2021 09:08:17
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-1B01.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



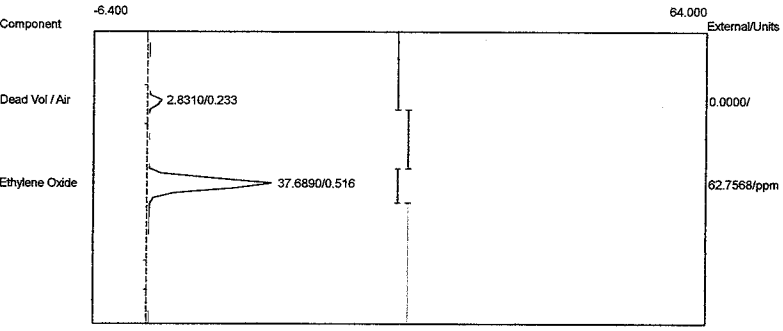
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	2.9410	0.0000	
Ethylene Oxide	0.533	84.2840	140.3432	ppm
		87.2250	140.3432	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: BV-Run#1
Analysis date: 12/10/2021 09:08:17
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-1B01.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



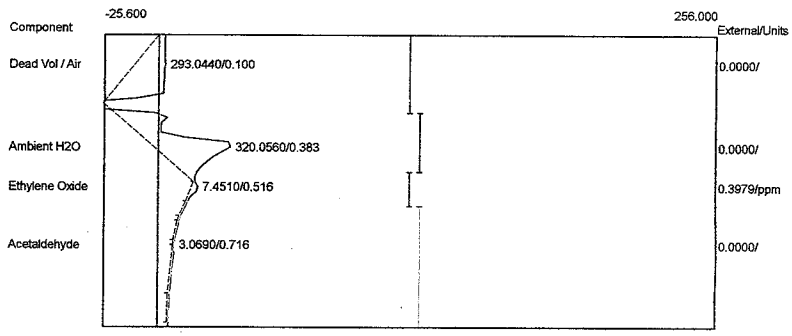
Component	Retention	Area	External	Units
Dead Vol / Air	0.150	214.5230	0.0000	
Ambient H2O	0.383	307.2760	0.0000	
Ethylene Oxide	0.533	20.9385	1.1181	ppm
Acetaldehyde	0.716	1.4795	0.0000	
		544.2170	1.1181	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: BV-Run#1
Analysis date: 12/10/2021 09:09:34
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-1B02.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



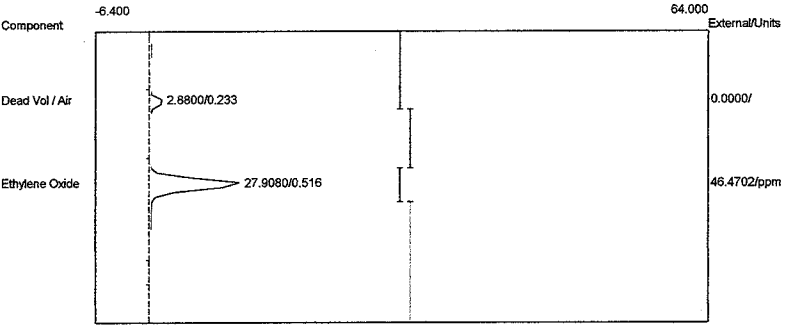
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.8310	0.0000	
Ethylene Oxide	0.516	37.6890	62.7568	ppm
		40.5200	62.7568	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: BV-Run#1
Analysis date: 12/10/2021 09:09:34
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-1B02.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



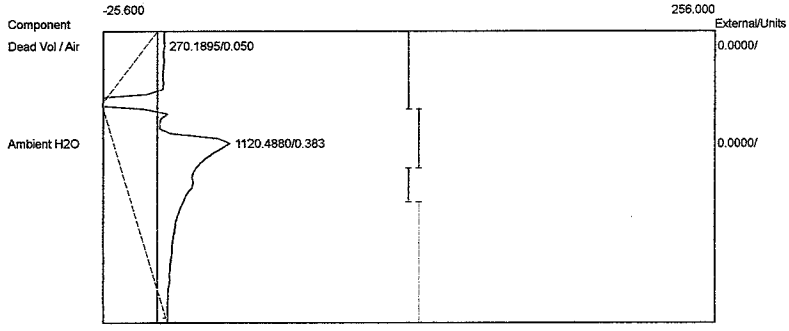
Component	Retention	Area	External	Units
Dead Vol / Air	0.100	293.0440	0.0000	
Ambient H2O	0.383	320.0560	0.0000	
Ethylene Oxide	0.516	7.4510	0.3979	ppm
Acetaldehyde	0.716	3.0690	0.0000	
		623.6200	0.3979	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: BV-Run#1
Analysis date: 12/10/2021 09:10:50
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-1B03.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



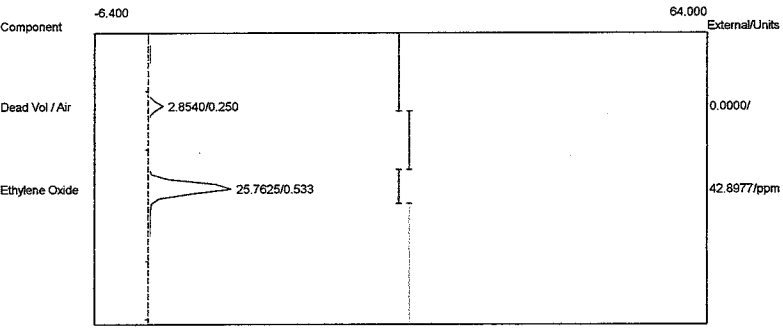
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.8800	0.0000	
Ethylene Oxide	0.516	27.9080	46.4702	ppm
		30.7880	46.4702	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: BV-Run#1
Analysis date: 12/10/2021 09:10:50
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-1B03.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



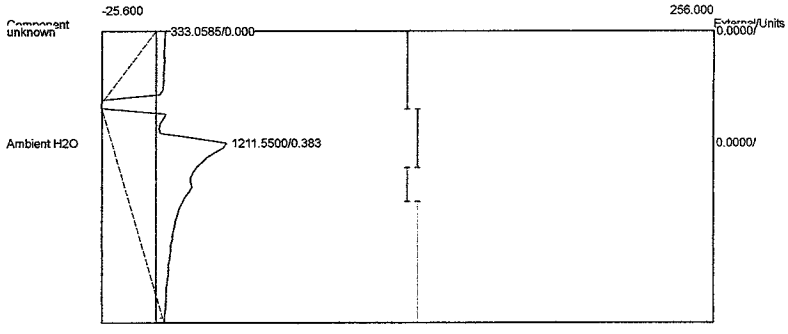
Component	Retention	Area	External	Units
Dead Vol / Air	0.050	270.1895	0.0000	
Ambient H2O	0.383	1120.4880	0.0000	
		1390.6775	0.0000	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: BV-Run#1
Analysis date: 12/10/2021 09:11:54
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-1B04.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



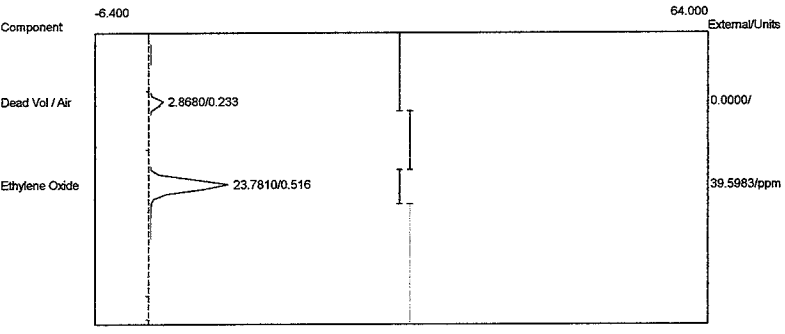
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	2.8540	0.0000	
Ethylene Oxide	0.533	25.7625	42.8977	ppm
		28.6165	42.8977	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: BV-Run#1
Analysis date: 12/10/2021 09:11:54
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-1B04.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



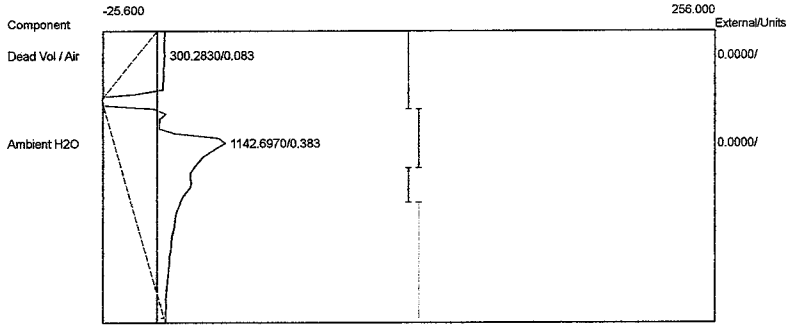
Component	Retention	Area	External	Units
Ambient H2O	0.383	1211.5500	0.0000	
		1211.5500	0.0000	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: BV-Run#1
Analysis date: 12/10/2021 09:12:59
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-1B05.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



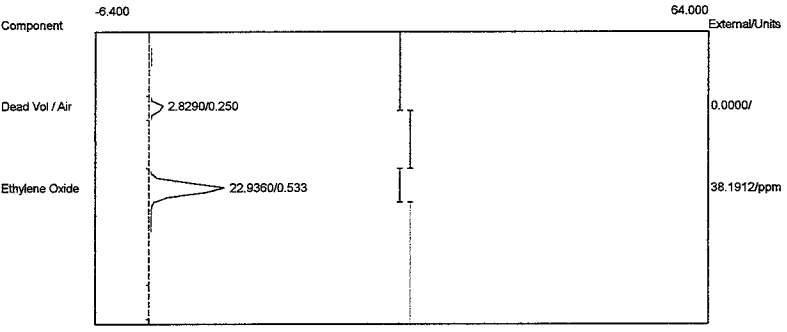
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.8680	0.0000	
Ethylene Oxide	0.516	23.7810	39.5983	ppm
		26.6490	39.5983	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: BV-Run#1
Analysis date: 12/10/2021 09:12:59
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-1B05.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



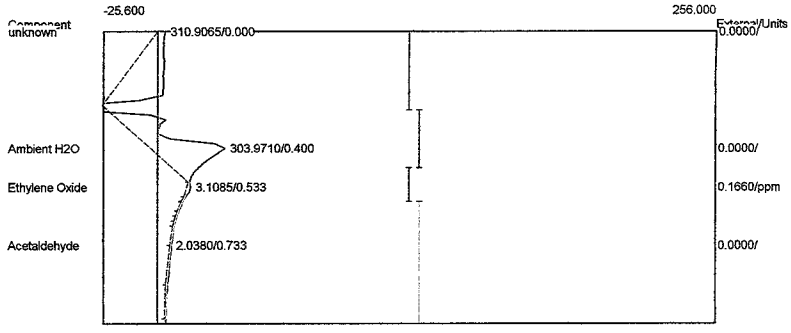
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	300.2830	0.0000	
Ambient H2O	0.383	1142.6970	0.0000	
		1442.9800	0.0000	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: BV-Run#1
Analysis date: 12/10/2021 09:14:05
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-1B06.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



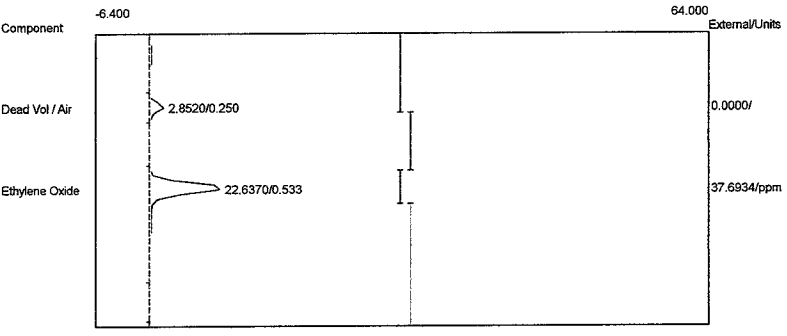
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	2.8290	0.0000	
Ethylene Oxide	0.533	22.9360	38.1912	ppm
		25.7650	38.1912	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: BV-Run#1
Analysis date: 12/10/2021 09:14:05
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-1B06.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



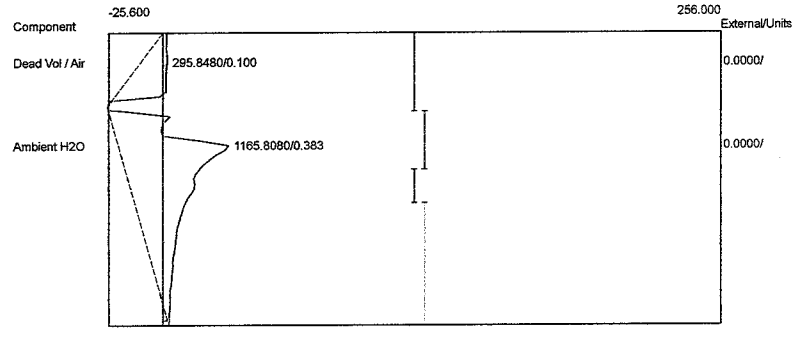
Component	Retention	Area	External	Units
Ambient H2O	0.400	303.9710	0.0000	
Ethylene Oxide	0.533	3.1085	0.1660	ppm
Acetaldehyde	0.733	2.0380	0.0000	
		309.1175	0.1660	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: BV-Run#1
Analysis date: 12/10/2021 09:15:28
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-1B07.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



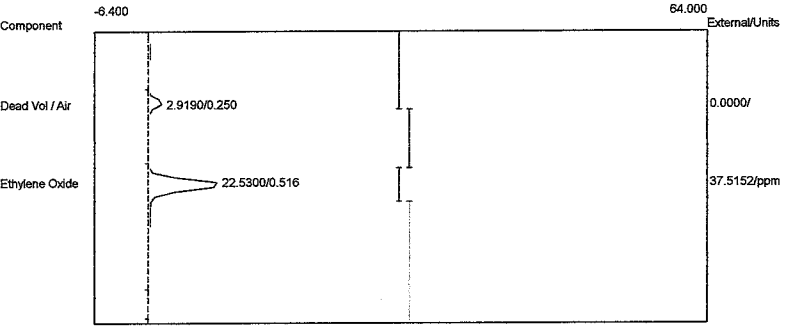
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	2.8520	0.0000	
Ethylene Oxide	0.533	22.6370	37.6934	ppm
		25.4890	37.6934	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: BV-Run#1
Analysis date: 12/10/2021 09:15:28
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-1B07.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



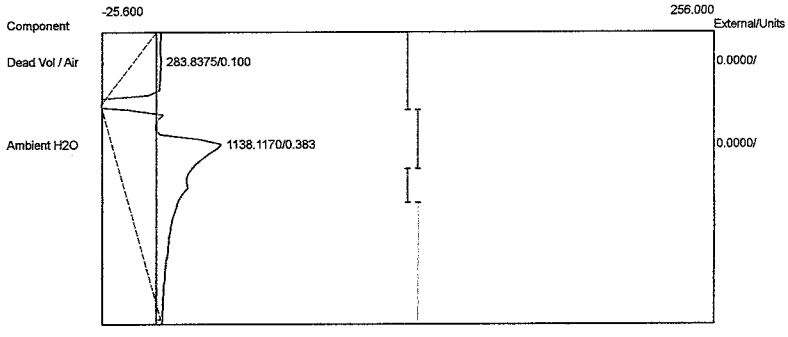
Component	Retention	Area	External	Units
Dead Vol / Air	0.100	295.8480	0.0000	
Ambient H2O	0.383	1165.8080	0.0000	
		1461.6560	0.0000	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: BV-Run#1
Analysis date: 12/10/2021 09:16:34
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-1B08.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



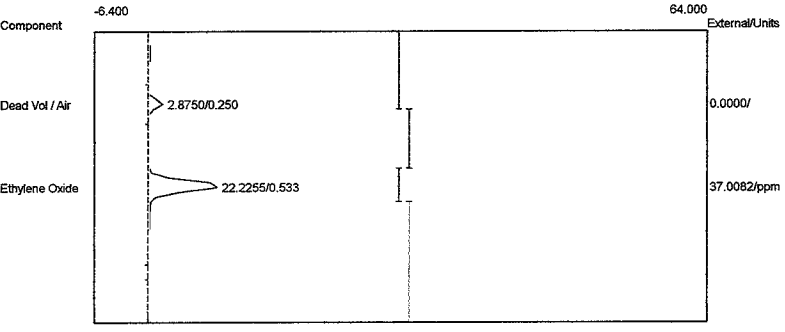
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	2.9190	0.0000	
Ethylene Oxide	0.516	22.5300	37.5152	ppm
		25.4490	37.5152	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: BV-Run#1
Analysis date: 12/10/2021 09:16:34
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-1B08.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



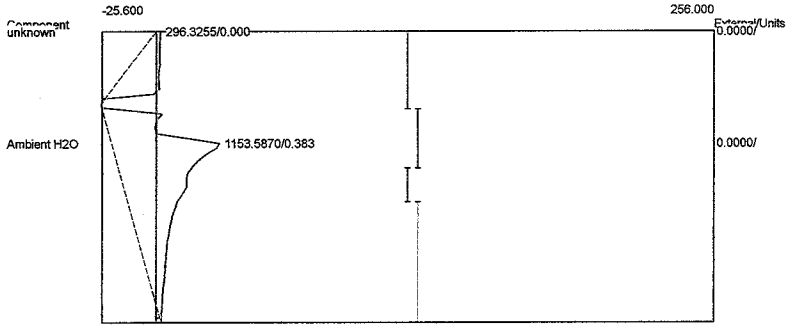
Component	Retention	Area	External	Units
Dead Vol / Air	0.100	283.8375	0.0000	
Ambient H2O	0.383	1138.1170	0.0000	
		1421.9545	0.0000	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: BV-Run#1
Analysis date: 12/10/2021 09:17:40
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-1B09.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



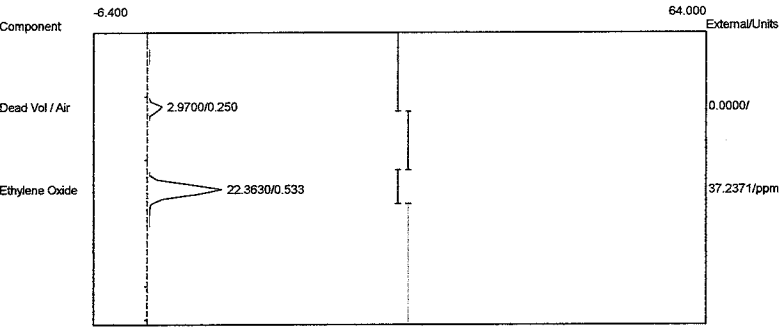
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	2.8750	0.0000	
Ethylene Oxide	0.533	22.2255	37.0082	ppm
		25.1005	37.0082	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: BV-Run#1
Analysis date: 12/10/2021 09:17:40
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-1B09.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



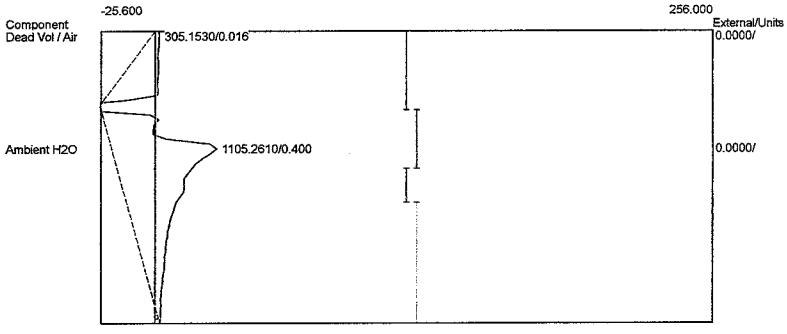
Component	Retention	Area	External	Units
Ambient H2O	0.383	1153.5870	0.0000	
		1153.5870	0.0000	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: BV-Run#1
Analysis date: 12/10/2021 09:18:45
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-1B10.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



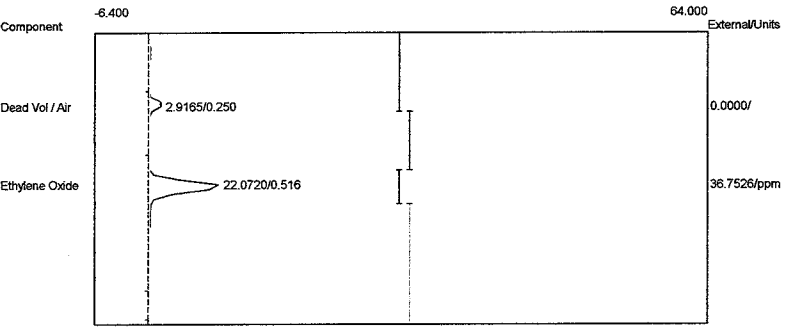
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	2.9700	0.0000	
Ethylene Oxide	0.533	22.3630	37.2371	ppm
		25.3330	37.2371	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: BV-Run#1
Analysis date: 12/10/2021 09:18:45
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-1B10.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



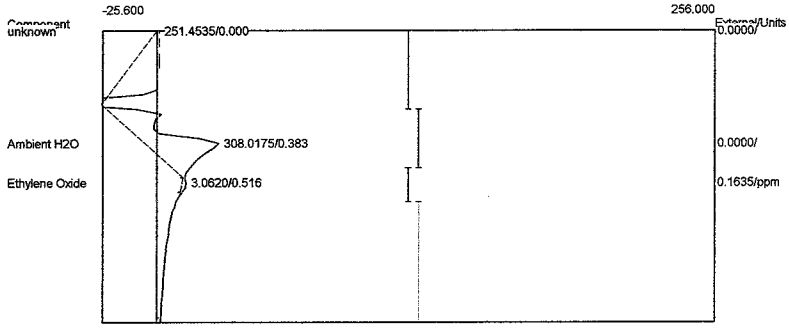
Component	Retention	Area	External	Units
Dead Vol / Air	0.016	305.1530	0.0000	
Ambient H2O	0.400	1105.2610	0.0000	
		1410.4140	0.0000	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: BV-Run#1
Analysis date: 12/10/2021 09:19:58
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-1B11.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



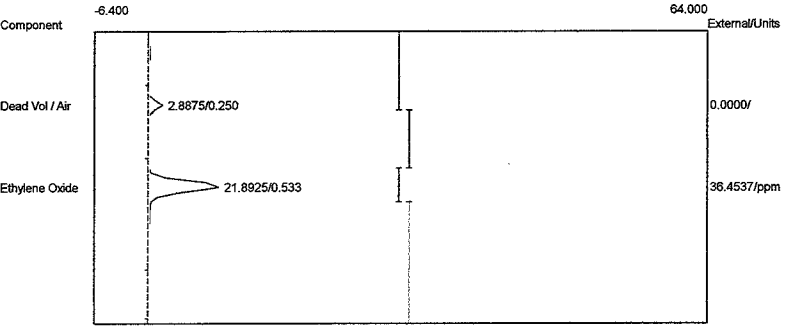
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	2.9165	0.0000	
Ethylene Oxide	0.516	22.0720	36.7526	ppm
		24.9885	36.7526	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: BV-Run#1
Analysis date: 12/10/2021 09:19:58
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-1B11.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



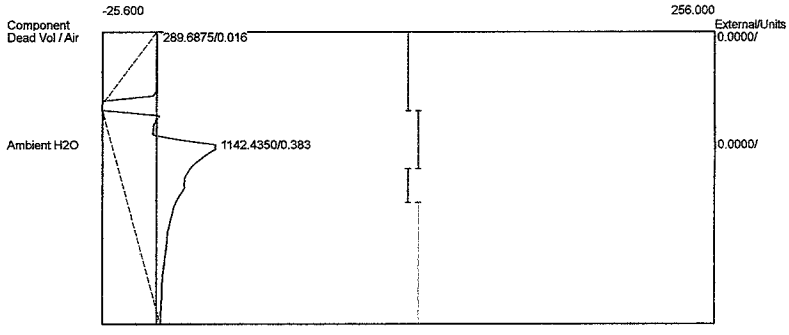
Component	Retention	Area	External	Units
Ambient H2O	0.383	308.0175	0.0000	
Ethylene Oxide	0.516	3.0620	0.1635	ppm
		311.0795	0.1635	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: BV-Run#1
Analysis date: 12/10/2021 09:21:15
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-1B12.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



Component	Retention	Area	External	Units
Dead Vol / Air	0.250	2.8875	0.0000	
Ethylene Oxide	0.533	21.8925	36.4537	ppm
		24.7800	36.4537	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: BV-Run#1
Analysis date: 12/10/2021 09:21:15
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-1B12.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer

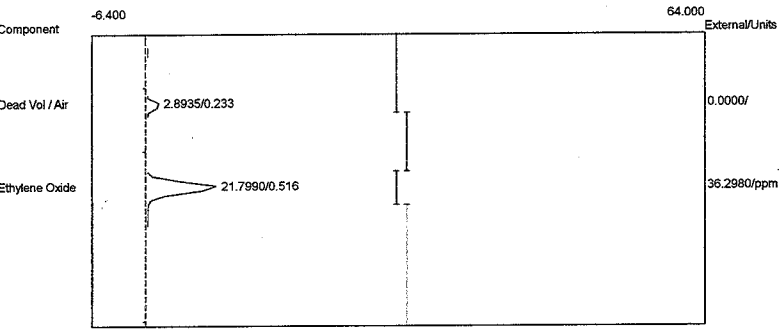


Component	Retention	Area	External	Units
Dead Vol / Air	0.016	289.6875	0.0000	
Ambient H2O	0.383	1142.4350	0.0000	
		1432.1225	0.0000	

APPENDIX C

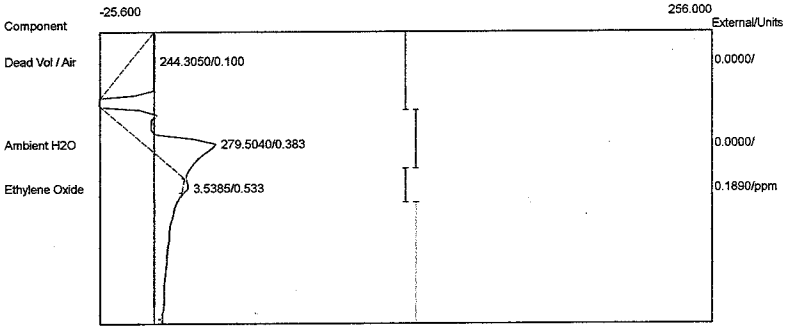
Run #1 Chromatograms – Aeration

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: Aer-Run#1
Analysis date: 12/10/2021 09:24:19
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-1A01.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



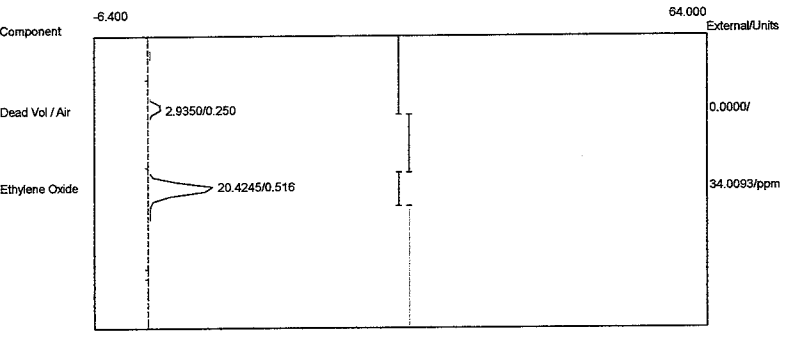
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.8935	0.0000	
Ethylene Oxide	0.516	21.7990	36.2980	ppm
		24.6925	36.2980	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: Aer-Run#1
Analysis date: 12/10/2021 09:24:19
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-1A01.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



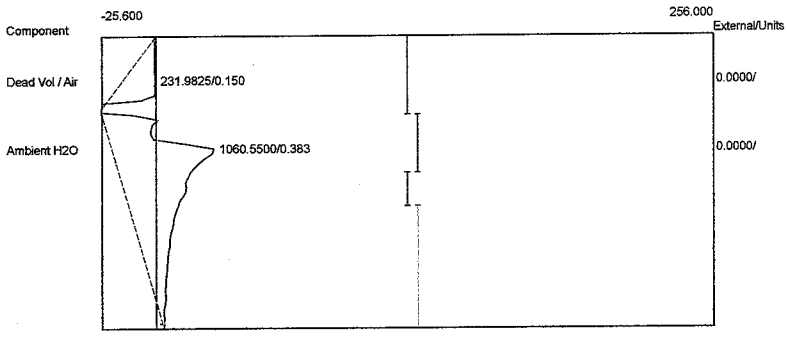
Component	Retention	Area	External	Units
Dead Vol / Air	0.100	244.3050	0.0000	
Ambient H2O	0.383	279.5040	0.0000	
Ethylene Oxide	0.533	3.5385	0.1890	ppm
		527.3475	0.1890	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: Aer-Run#1
Analysis date: 12/10/2021 09:29:07
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-1A02.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



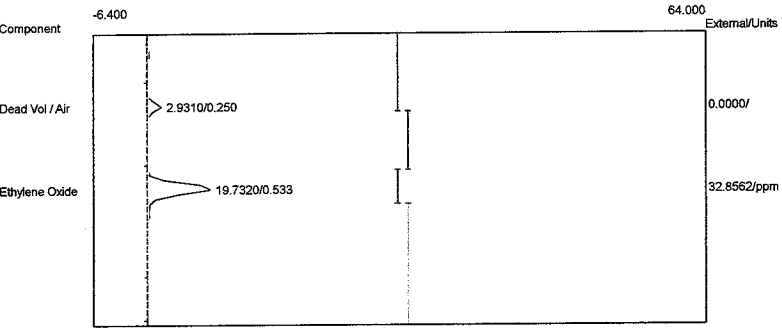
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	2.9350	0.0000	
Ethylene Oxide	0.516	20.4245	34.0093	ppm
		23.3595	34.0093	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: Aer-Run#1
Analysis date: 12/10/2021 09:29:07
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-1A02.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



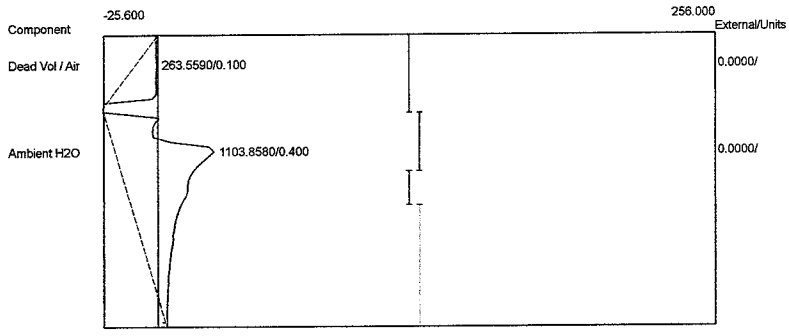
Component	Retention	Area	External	Units
Dead Vol / Air	0.150	231.9825	0.0000	
Ambient H2O	0.383	1060.5500	0.0000	
		1292.5325	0.0000	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: Aer-Run#1
Analysis date: 12/10/2021 09:34:04
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-1A03.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



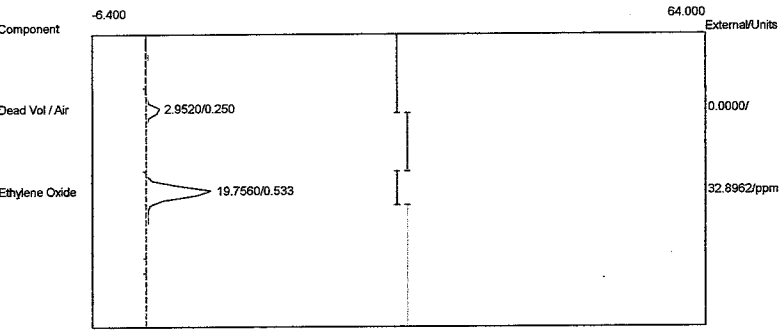
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	2.9310	0.0000	
Ethylene Oxide	0.533	19.7320	32.8562	ppm
		22.6630	32.8562	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: Aer-Run#1
Analysis date: 12/10/2021 09:34:04
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-1A03.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



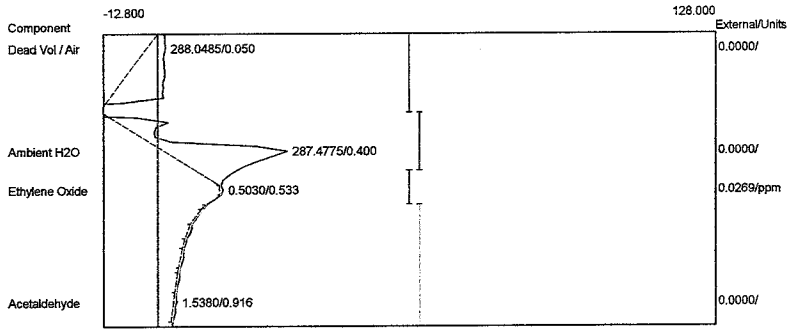
Component	Retention	Area	External	Units
Dead Vol / Air	0.100	263.5590	0.0000	
Ambient H2O	0.400	1103.8580	0.0000	
		1367.4170	0.0000	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: Aer-Run#1
Analysis date: 12/10/2021 09:39:19
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-1A04.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



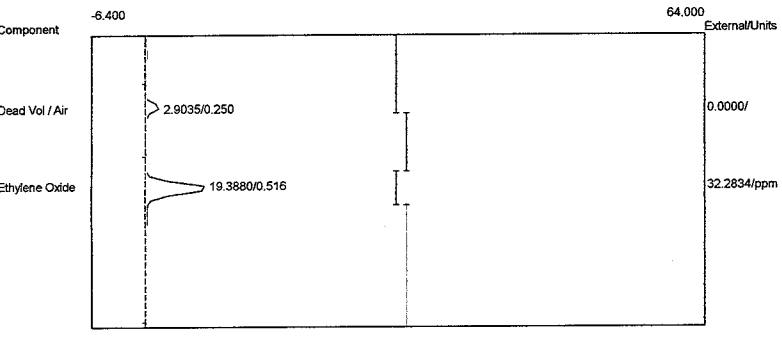
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	2.9520	0.0000	
Ethylene Oxide	0.533	19.7560	32.8962	ppm
		22.7080	32.8962	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: Aer-Run#1
Analysis date: 12/10/2021 09:39:19
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-1A04.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



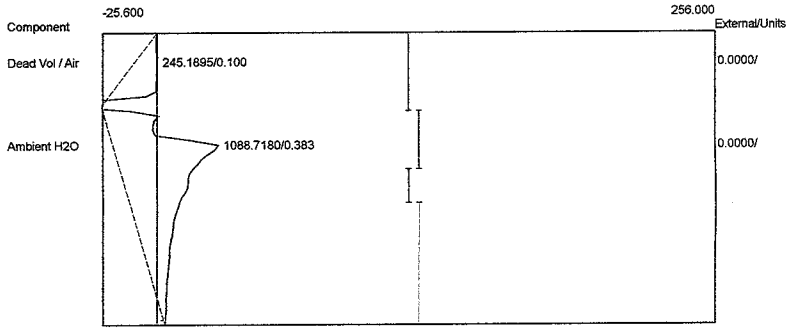
Component	Retention	Area	External	Units
Dead Vol / Air	0.050	288.0485	0.0000	
Ambient H2O	0.400	287.4775	0.0000	
Ethylene Oxide	0.533	0.5030	0.0269	ppm
Acetaldehyde	0.916	1.5380	0.0000	
		577.5670	0.0269	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: Aer-Run#1
Analysis date: 12/10/2021 09:44:06
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-1A05.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



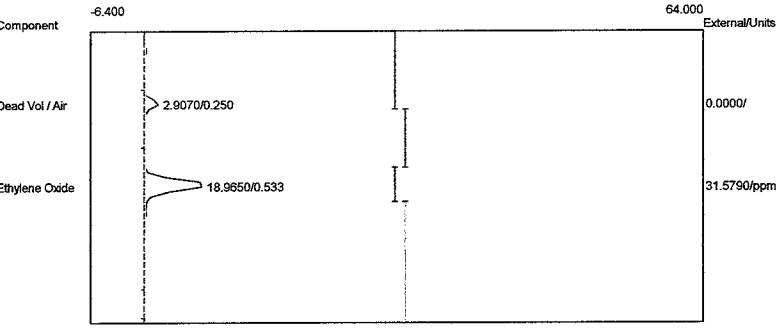
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	2.9035	0.0000	
Ethylene Oxide	0.516	19.3880	32.2834	ppm
		22.2915	32.2834	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: Aer-Run#1
Analysis date: 12/10/2021 09:44:06
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-1A05.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



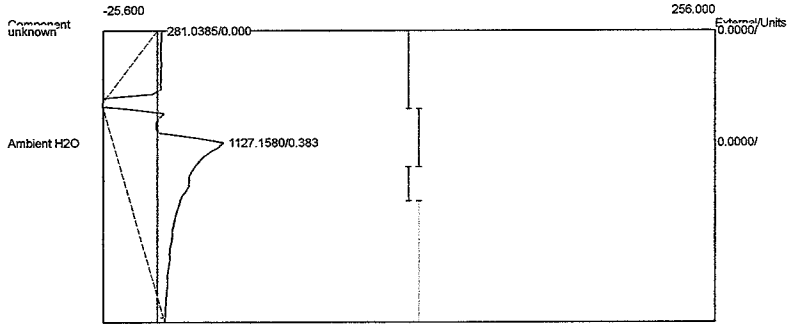
Component	Retention	Area	External	Units
Dead Vol / Air	0.100	245.1895	0.0000	
Ambient H2O	0.383	1088.7180	0.0000	
		1333.9075	0.0000	

Lab name: ECSI
Client: Sterigenics - Charlotte, NC
Client ID: Aer-Run#1
Analysis date: 12/10/2021 09:49:28
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-1A06.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



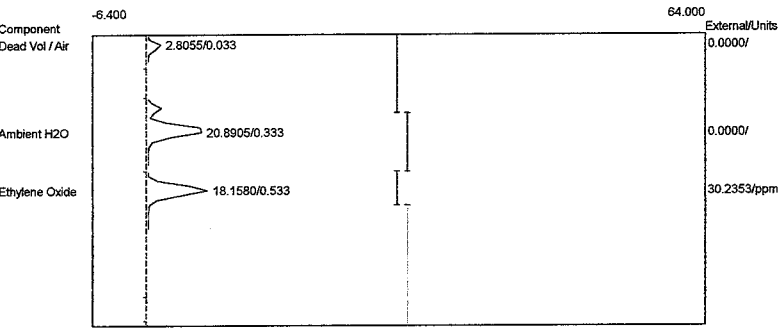
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	2.9070	0.0000	
Ethylene Oxide	0.533	18.9650	31.5790	ppm
		21.8720	31.5790	

Lab name: ECSI
Client: Sterigenics - Queensbury
Client ID: Aer-Run#1
Analysis date: 12/10/2021 09:49:28
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-1A06.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



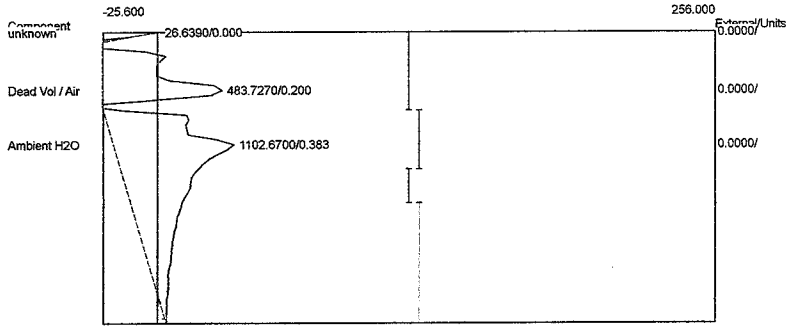
Component	Retention	Area	External	Units
Ambient H2O	0.383	1127.1580	0.0000	
		1127.1580	0.0000	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: Aer-Run#1
Analysis date: 12/10/2021 09:54:58
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-1A07.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



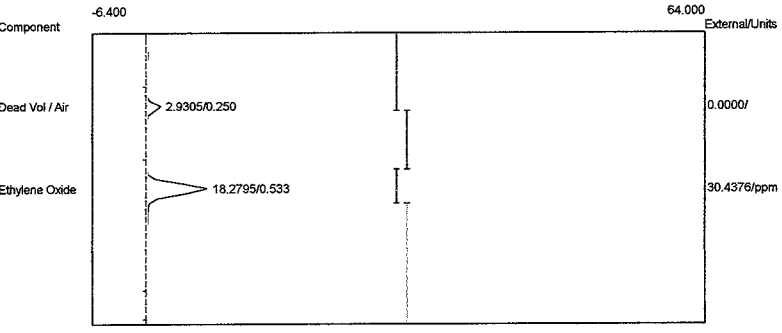
Component	Retention	Area	External	Units
Dead Vol / Air	0.033	2.8055	0.0000	
Ambient H2O	0.333	20.8905	0.0000	
Ethylene Oxide	0.533	18.1580	30.2353	ppm
		41.8540	30.2353	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: Aer-Run#1
Analysis date: 12/10/2021 09:54:58
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-1A07.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



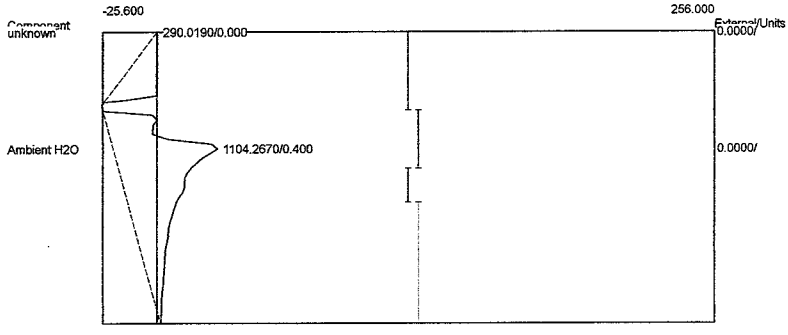
Component	Retention	Area	External	Units
Dead Vol / Air	0.200	483.7270	0.0000	
Ambient H2O	0.383	1102.6700	0.0000	
		1586.3970	0.0000	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: Aer-Run#1
Analysis date: 12/10/2021 09:59:14
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-1A08.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



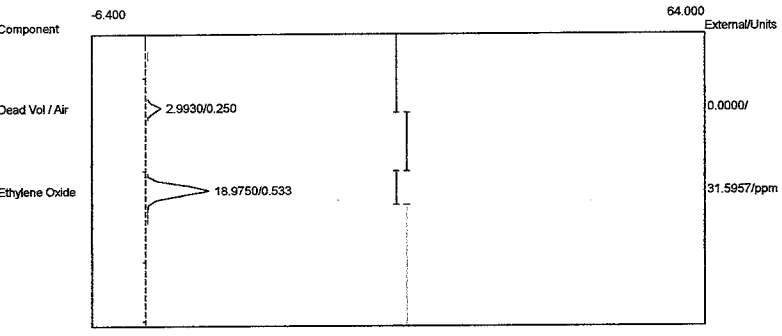
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	2.9305	0.0000	
Ethylene Oxide	0.533	18.2795	30.4376	ppm
		21.2100	30.4376	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: Aer-Run#1
Analysis date: 12/10/2021 09:59:14
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-1A08.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



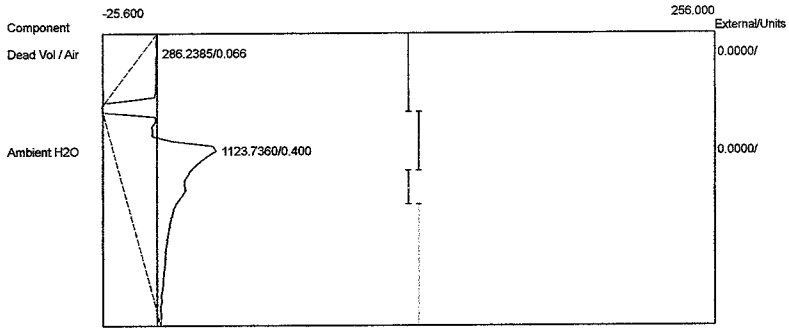
Component	Retention	Area	External	Units
Ambient H2O	0.400	1104.2670	0.0000	
		1104.2670	0.0000	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: Aer-Run#1
Analysis date: 12/10/2021 10:04:36
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-1A09.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



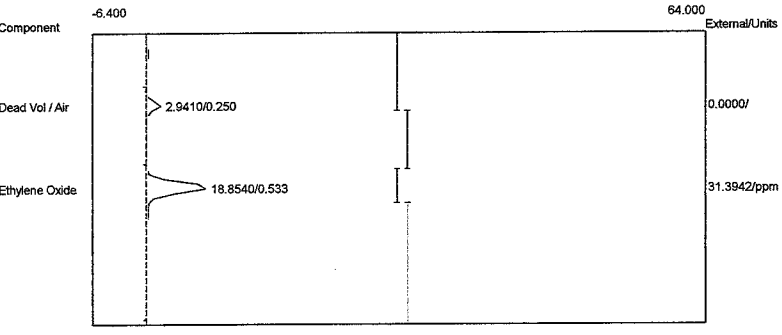
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	2.9930	0.0000	
Ethylene Oxide	0.533	18.9750	31.5957	ppm
		21.9680	31.5957	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: Aer-Run#1
Analysis date: 12/10/2021 10:04:36
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-1A09.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



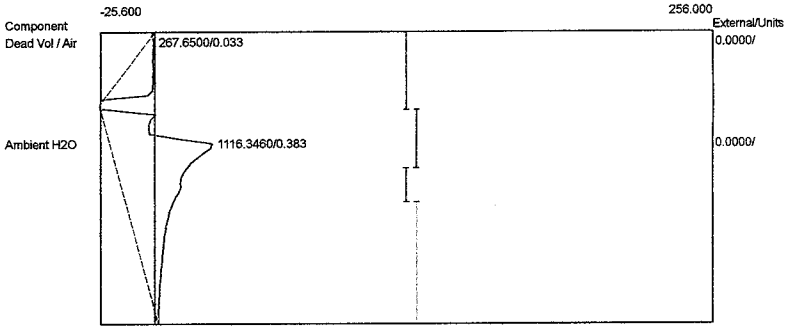
Component	Retention	Area	External	Units
Dead Vol / Air	0.066	286.2385	0.0000	
Ambient H2O	0.400	1123.7360	0.0000	
		1409.9745	0.0000	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: Aer-Run#1
Analysis date: 12/10/2021 10:09:05
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-1A10.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



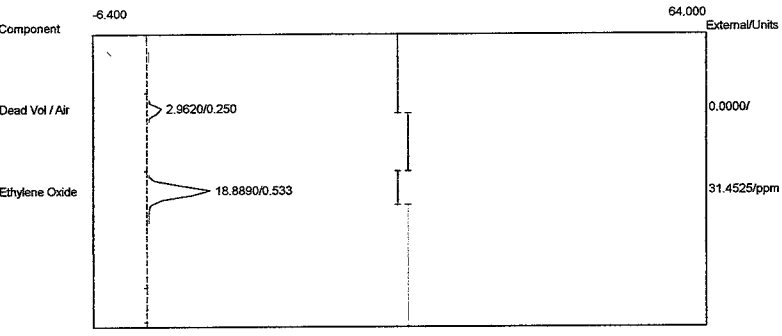
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	2.9410	0.0000	
Ethylene Oxide	0.533	18.8540	31.3942	ppm
		21.7950	31.3942	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: Aer-Run#1
Analysis date: 12/10/2021 10:09:05
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-1A10.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



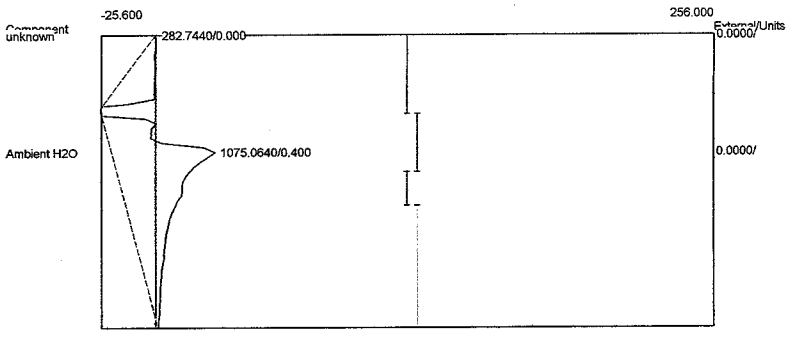
Component	Retention	Area	External	Units
Dead Vol / Air	0.033	267.6500	0.0000	
Ambient H2O	0.383	1116.3460	0.0000	
		1383.9960	0.0000	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: Aer-Run#1
Analysis date: 12/10/2021 10:14:14
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-1A11.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



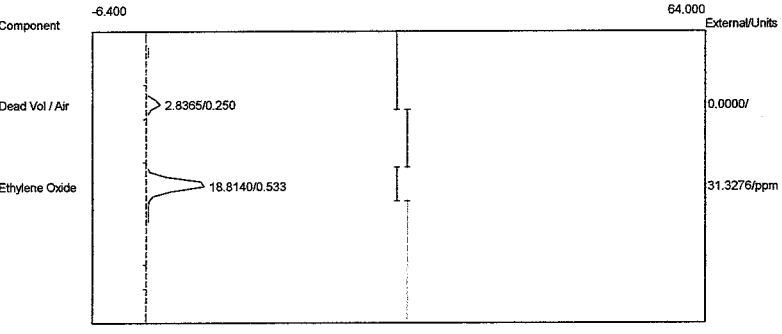
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	2.9620	0.0000	
Ethylene Oxide	0.533	18.8890	31.4525	ppm
		21.8510	31.4525	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: Aer-Run#1
Analysis date: 12/10/2021 10:14:14
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-1A11.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



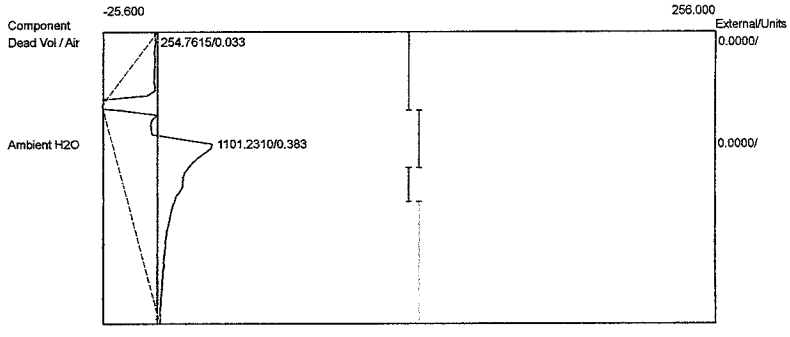
Component	Retention	Area	External	Units
Ambient H2O	0.400	1075.0640	0.0000	
		1075.0640	0.0000	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: Aer-Run#1
Analysis date: 12/10/2021 10:19:50
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-1A12.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



Component	Retention	Area	External	Units
Dead Vol / Air	0.250	2.8365	0.0000	
Ethylene Oxide	0.533	18.8140	31.3276	ppm
		21.6505	31.3276	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: Aer-Run#1
Analysis date: 12/10/2021 10:19:50
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-1A12.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer

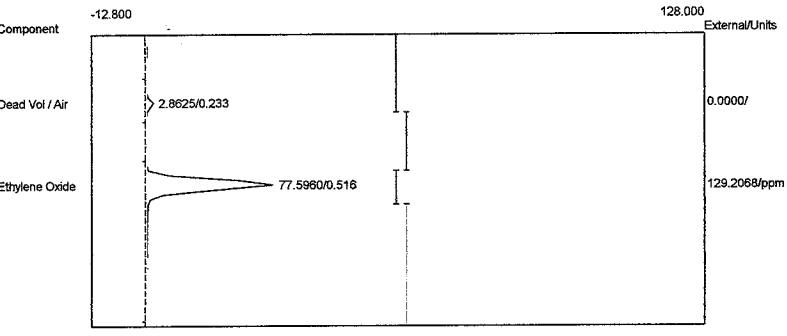


Component	Retention	Area	External	Units
Dead Vol / Air	0.033	254.7615	0.0000	
Ambient H2O	0.383	1101.2310	0.0000	
		1355.9925	0.0000	

APPENDIX D

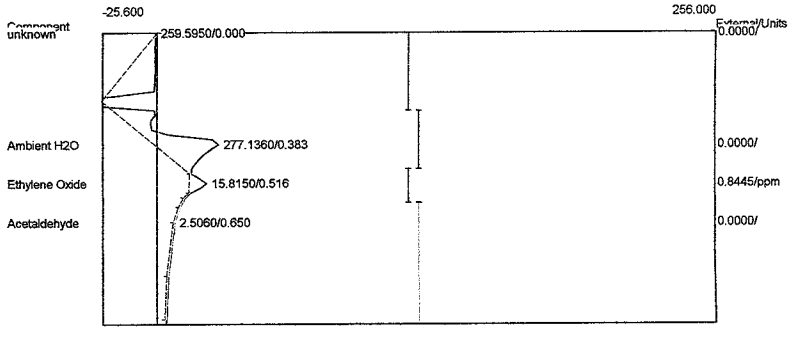
Run #2 Chromatograms – Backvent

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: BV-Run#2
Analysis date: 12/10/2021 10:34:03
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-2B01.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



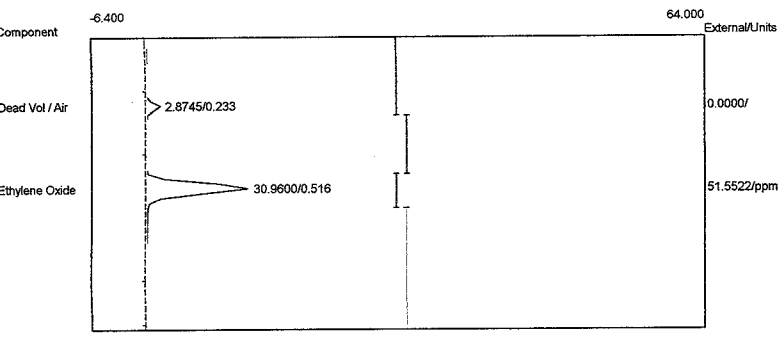
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.8625	0.0000	
Ethylene Oxide	0.516	77.5960	129.2068	ppm
		80.4585	129.2068	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: BV-Run#2
Analysis date: 12/10/2021 10:34:03
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-2B01.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



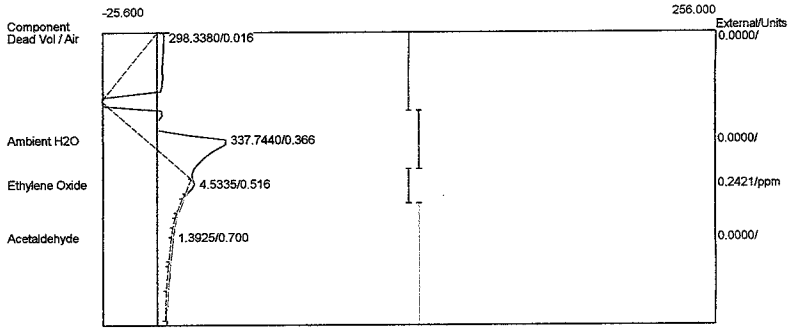
Component	Retention	Area	External	Units
Ambient H2O	0.383	277.1360	0.0000	
Ethylene Oxide	0.516	15.8150	0.8445	ppm
Acetaldehyde	0.650	2.5060	0.0000	
		295.4570	0.8445	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: BV-Run#2
Analysis date: 12/10/2021 10:35:18
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-2B02.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



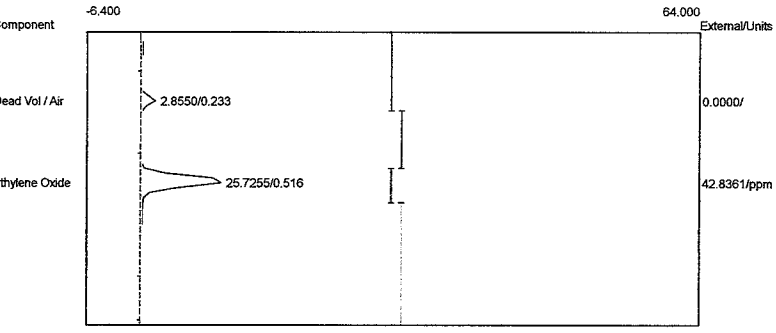
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.8745	0.0000	
Ethylene Oxide	0.516	30.9600	51.5522	ppm
		33.8345	51.5522	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: BV-Run#2
Analysis date: 12/10/2021 10:35:18
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-2B02.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



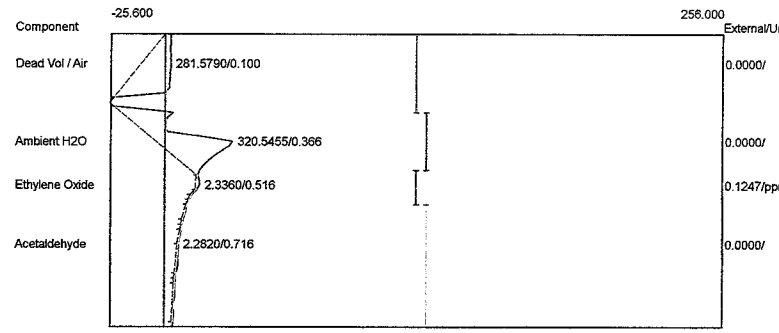
Component	Retention	Area	External	Units
Dead Vol / Air	0.016	298.3380	0.0000	
Ambient H2O	0.366	337.7440	0.0000	
Ethylene Oxide	0.516	4.5335	0.2421	ppm
Acetaldehyde	0.700	1.3925	0.0000	
		642.0080	0.2421	

Lab name: ECSI
Client: Sterigenics - Charlotte, NC
Client ID: BV-Run#2
Analysis date: 12/10/2021 10:36:38
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-2B03.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



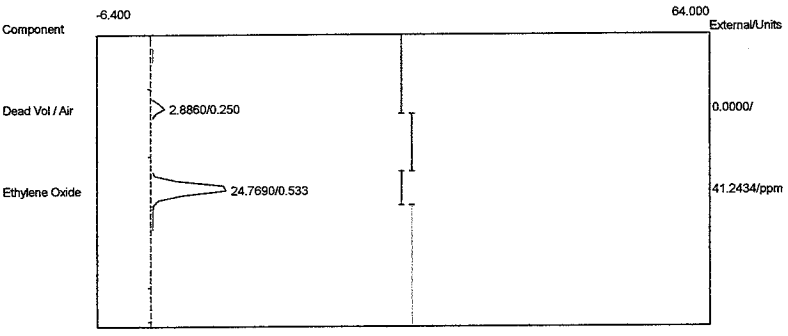
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.8550	0.0000	
Ethylene Oxide	0.516	25.7255	42.8361	ppm
		28.5805	42.8361	

Lab name: ECSI
Client: Sterigenics - Queensbury
Client ID: BV-Run#2
Analysis date: 12/10/2021 10:36:38
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-2B03.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



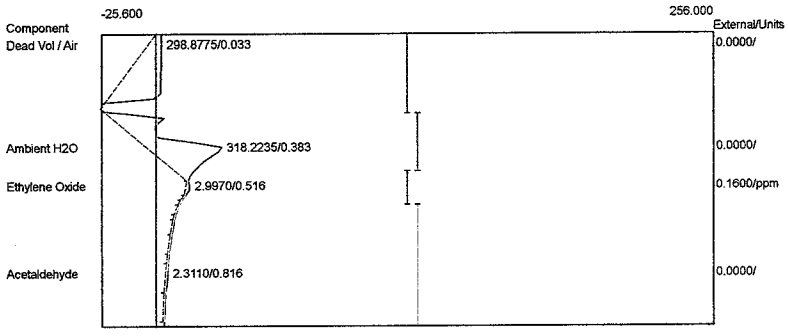
Component	Retention	Area	External	Units
Dead Vol / Air	0.100	281.5790	0.0000	
Ambient H2O	0.366	320.5455	0.0000	
Ethylene Oxide	0.516	2.3360	0.1247	ppm
Acetaldehyde	0.716	2.2820	0.0000	
		606.7425	0.1247	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: BV-Run#2
Analysis date: 12/10/2021 10:37:55
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-2B04.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



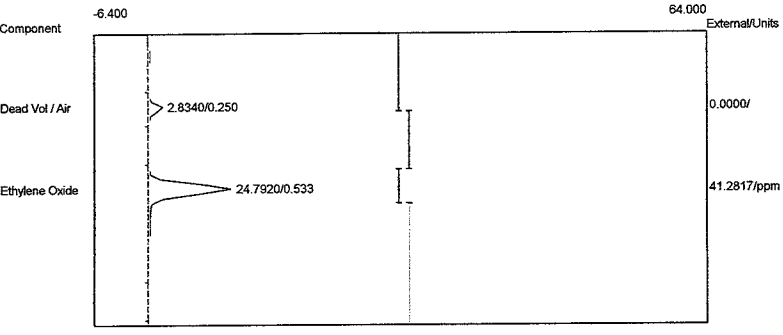
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	2.8860	0.0000	
Ethylene Oxide	0.533	24.7690	41.2434	ppm
		27.6550	41.2434	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: BV-Run#2
Analysis date: 12/10/2021 10:37:55
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-2B04.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



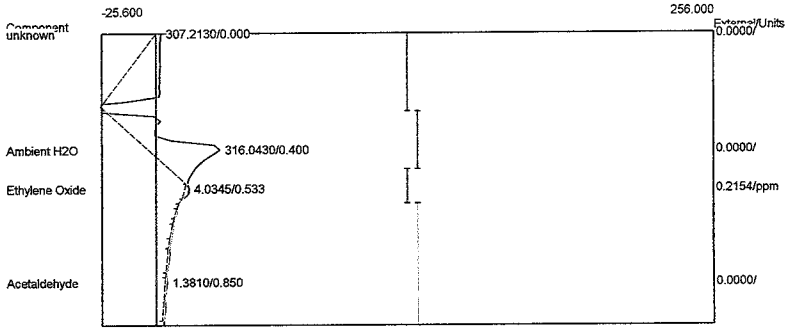
Component	Retention	Area	External	Units
Dead Vol / Air	0.033	298.8775	0.0000	
Ambient H2O	0.383	318.2235	0.0000	
Ethylene Oxide	0.516	2.9970	0.1600	ppm
Acetaldehyde	0.816	2.3110	0.0000	
		622.4090	0.1600	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: BV-Run#2
Analysis date: 12/10/2021 10:39:16
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-2B05.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



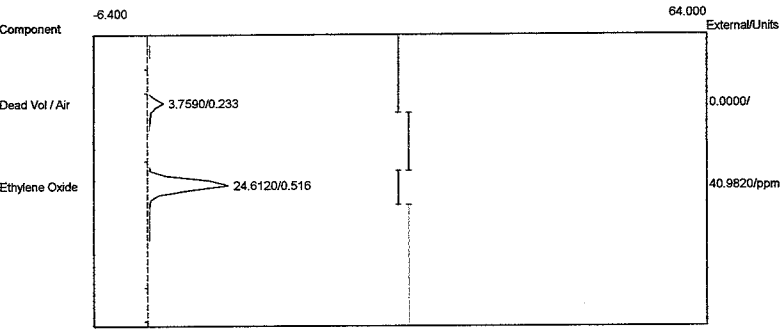
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	2.8340	0.0000	
Ethylene Oxide	0.533	24.7920	41.2817	ppm
		27.6260	41.2817	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: BV-Run#2
Analysis date: 12/10/2021 10:39:16
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-2B05.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



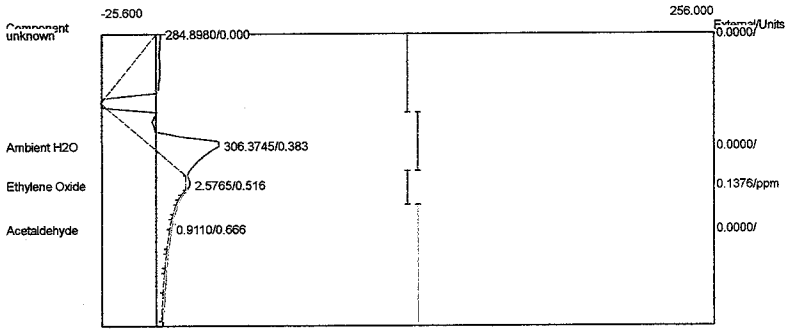
Component	Retention	Area	External	Units
Ambient H2O	0.400	316.0430	0.0000	
Ethylene Oxide	0.533	4.0345	0.2154	ppm
Acetaldehyde	0.850	1.3810	0.0000	
		321.4585	0.2154	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: BV-Run#2
Analysis date: 12/10/2021 10:40:33
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-2B06.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



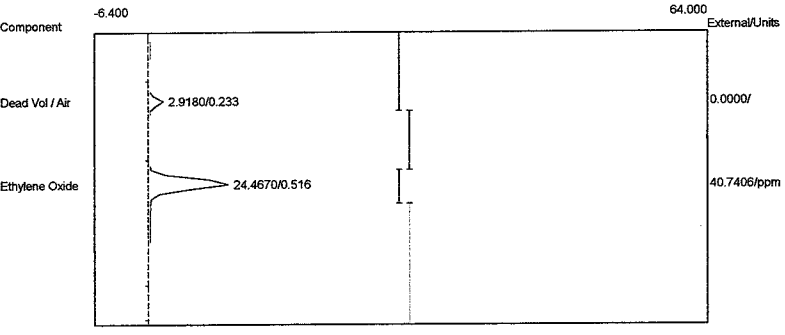
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	3.7590	0.0000	
Ethylene Oxide	0.516	24.6120	40.9820	ppm
		28.3710	40.9820	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: BV-Run#2
Analysis date: 12/10/2021 10:40:33
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-2B06.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



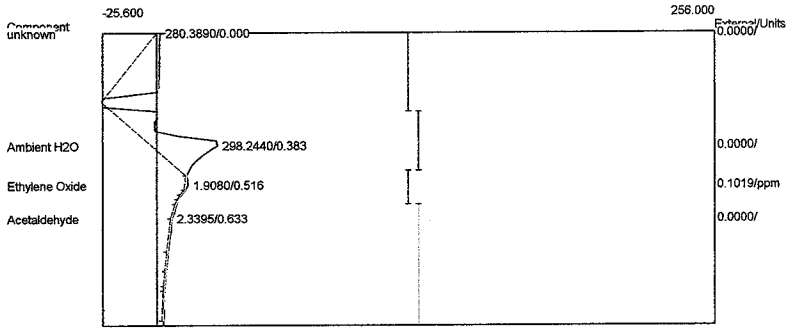
Component	Retention	Area	External	Units
Ambient H2O	0.383	306.3745	0.0000	
Ethylene Oxide	0.516	2.5765	0.1376	ppm
Acetaldehyde	0.666	0.9110	0.0000	
		309.8620	0.1376	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: BV-Run#2
Analysis date: 12/10/2021 10:41:49
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-2B07.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



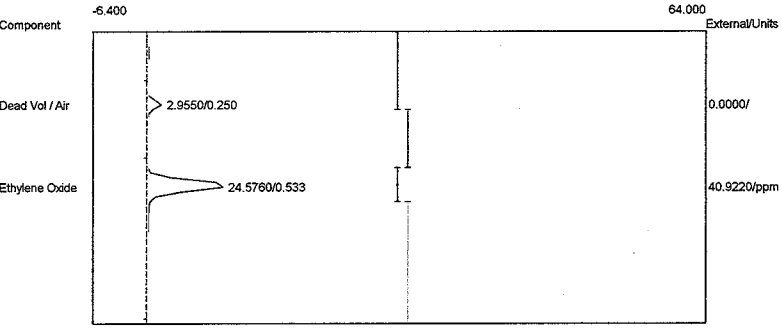
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.9180	0.0000	
Ethylene Oxide	0.516	24.4670	40.7406	ppm
		27.3850	40.7406	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: BV-Run#2
Analysis date: 12/10/2021 10:41:49
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-2B07.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



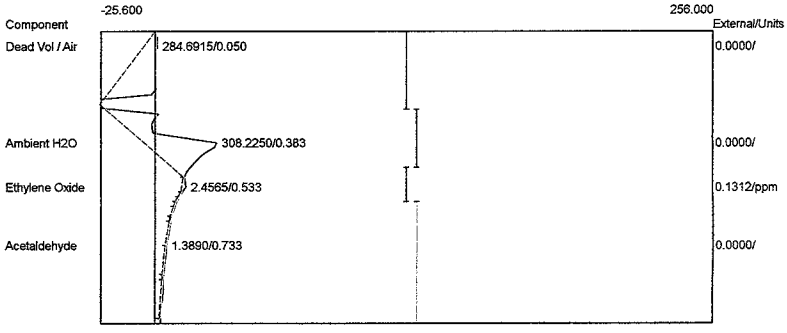
Component	Retention	Area	External	Units
Ambient H2O	0.383	298.2440	0.0000	
Ethylene Oxide	0.516	1.9080	0.1019	ppm
Acetaldehyde	0.633	2.3395	0.0000	
		302.4915	0.1019	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: BV-Run#2
Analysis date: 12/10/2021 10:43:15
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-2B08.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



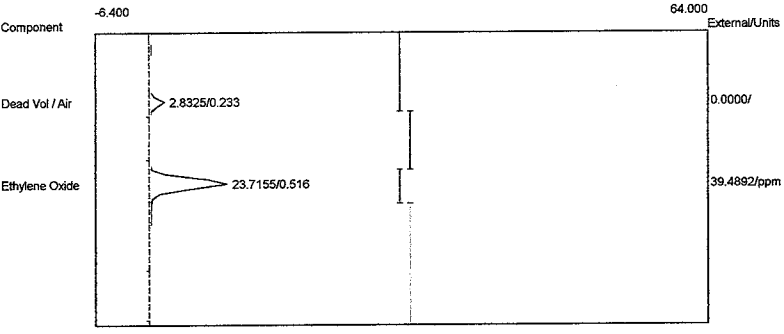
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	2.9550	0.0000	
Ethylene Oxide	0.533	24.5760	40.9220	ppm
		27.5310	40.9220	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: BV-Run#2
Analysis date: 12/10/2021 10:43:15
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-2B08.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



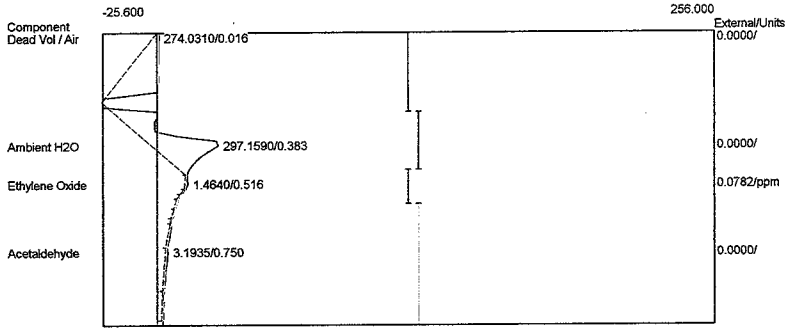
Component	Retention	Area	External	Units
Dead Vol / Air	0.050	284.6915	0.0000	
Ambient H2O	0.383	308.2250	0.0000	
Ethylene Oxide	0.533	2.4565	0.1312	ppm
Acetaldehyde	0.733	1.3890	0.0000	
		596.7620	0.1312	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: BV-Run#2
Analysis date: 12/10/2021 10:44:34
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-2B09.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



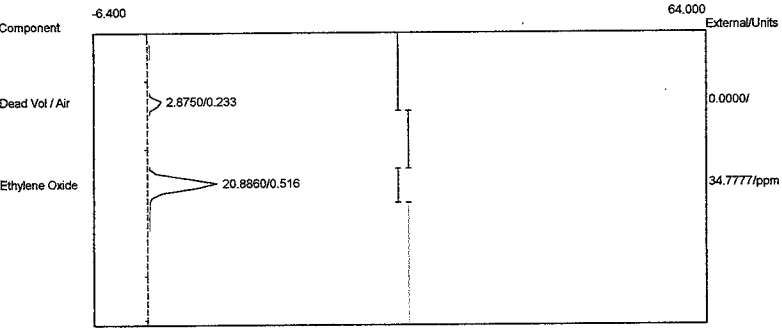
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.8325	0.0000	
Ethylene Oxide	0.516	23.7155	39.4892	ppm
		26.5480	39.4892	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: BV-Run#2
Analysis date: 12/10/2021 10:44:34
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-2B09.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



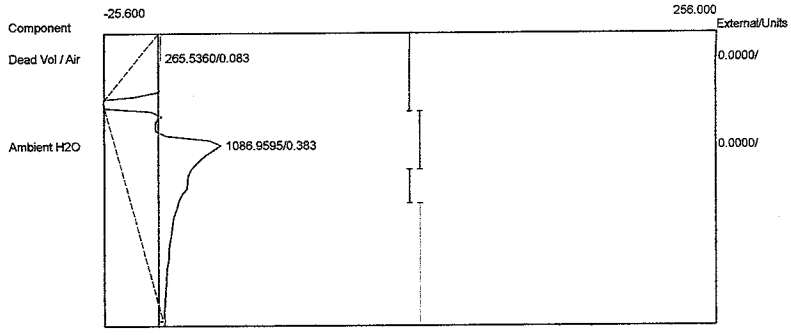
Component	Retention	Area	External	Units
Dead Vol / Air	0.016	274.0310	0.0000	
Ambient H2O	0.383	297.1590	0.0000	
Ethylene Oxide	0.516	1.4640	0.0782	ppm
Acetaldehyde	0.750	3.1935	0.0000	
		575.8475	0.0782	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: BV-Run#2
Analysis date: 12/10/2021 10:45:55
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-2B10.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



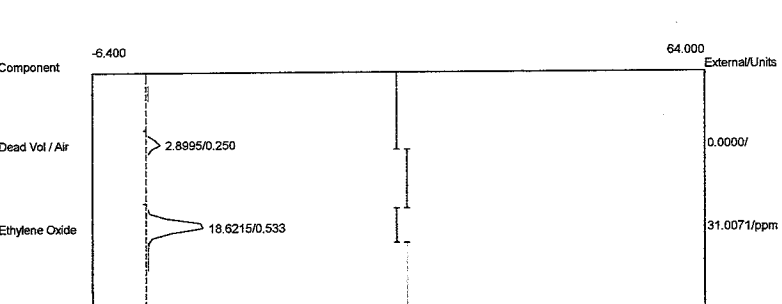
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.8750	0.0000	
Ethylene Oxide	0.516	20.8860	34.7777	ppm
		23.7610	34.7777	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: BV-Run#2
Analysis date: 12/10/2021 10:45:55
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-2B10.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



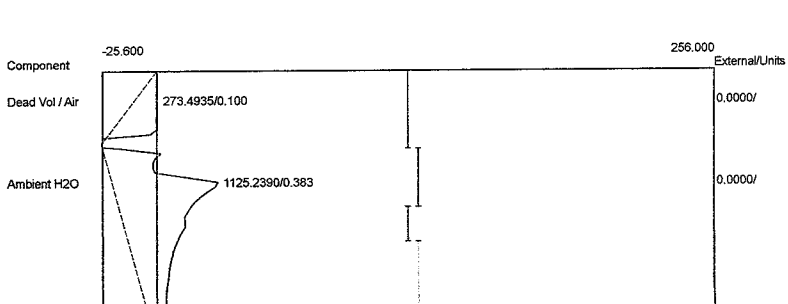
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	265.5360	0.0000	
Ambient H2O	0.383	1086.9595	0.0000	
		1352.4955	0.0000	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: BV-Run#2
Analysis date: 12/10/2021 10:47:21
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-2B11.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



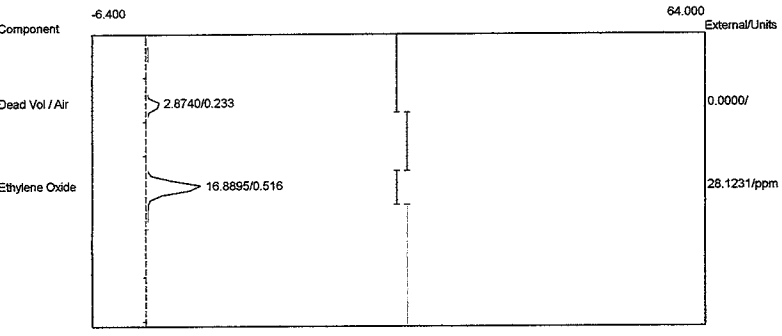
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	2.8995	0.0000	
Ethylene Oxide	0.533	18.6215	31.0071	ppm
		21.5210	31.0071	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: BV-Run#2
Analysis date: 12/10/2021 10:47:21
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-2B11.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



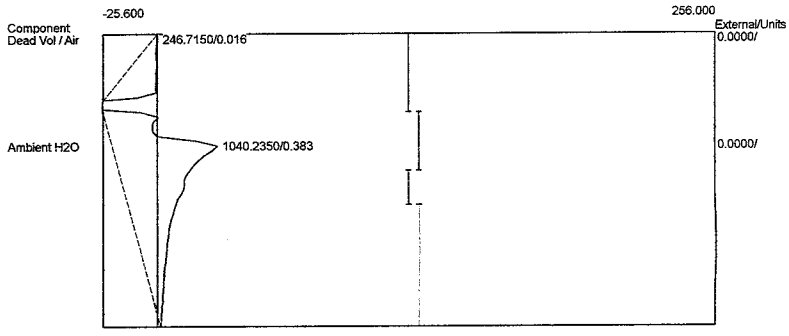
Component	Retention	Area	External	Units
Dead Vol / Air	0.100	273.4935	0.0000	
Ambient H2O	0.383	1125.2390	0.0000	
		1398.7325	0.0000	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: BV-Run#2
Analysis date: 12/10/2021 10:48:55
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-2B12.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.8740	0.0000	
Ethylene Oxide	0.516	16.8895	28.1231	ppm
		19.7635	28.1231	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: BV-Run#2
Analysis date: 12/10/2021 10:48:55
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-2B12.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer

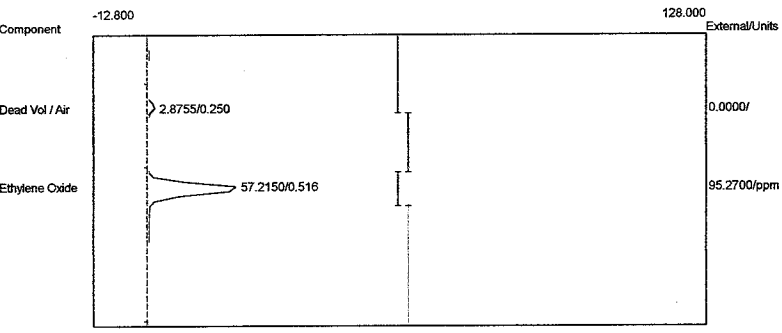


Component	Retention	Area	External	Units
Dead Vol / Air	0.016	246.7150	0.0000	
Ambient H2O	0.383	1040.2350	0.0000	
		1286.9500	0.0000	

APPENDIX E

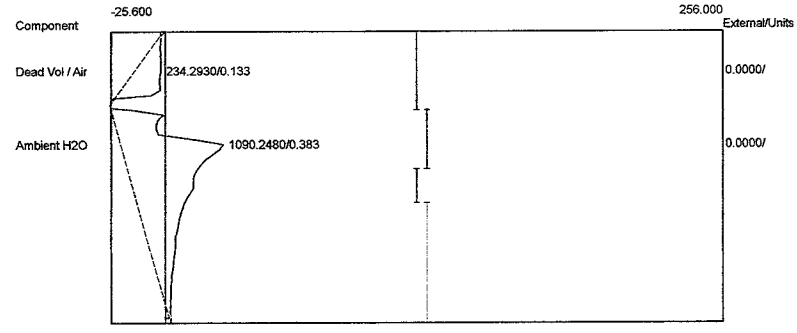
Run #3 Chromatograms – Backvent

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: BV-Run#3
Analysis date: 12/10/2021 10:53:08
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-3B01.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



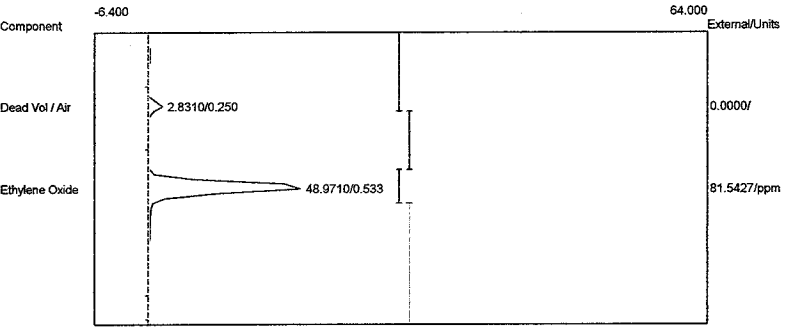
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	2.8755	0.0000	
Ethylene Oxide	0.516	57.2150	95.2700	ppm
		60.0905	95.2700	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: BV-Run#3
Analysis date: 12/10/2021 10:53:08
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-3B01.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



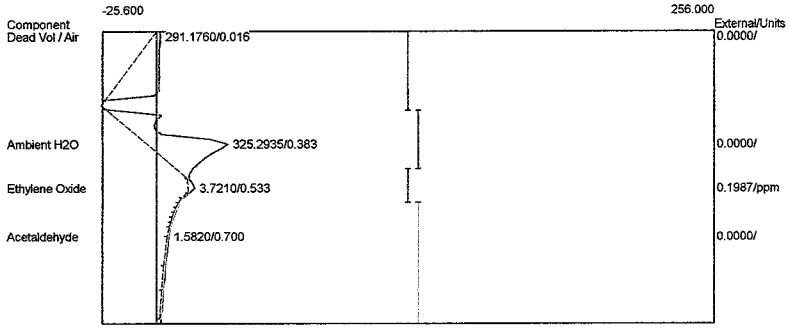
Component	Retention	Area	External	Units
Dead Vol / Air	0.133	234.2930	0.0000	
Ambient H2O	0.383	1090.2480	0.0000	
		1324.5410	0.0000	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: BV-Run#3
Analysis date: 12/10/2021 10:54:11
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-3B02.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



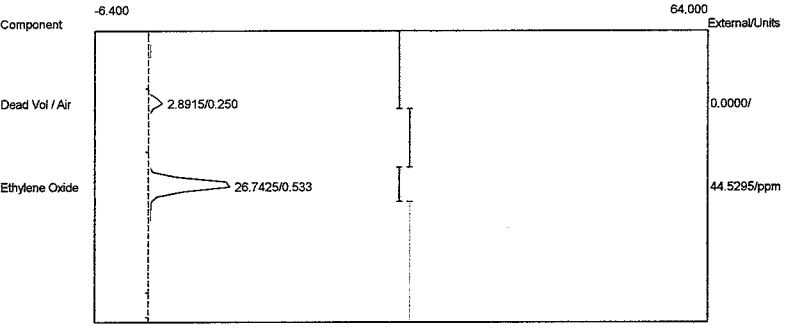
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	2.8310	0.0000	
Ethylene Oxide	0.533	48.9710	81.5427	ppm
		51.8020	81.5427	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: BV-Run#3
Analysis date: 12/10/2021 10:54:11
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-3B02.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



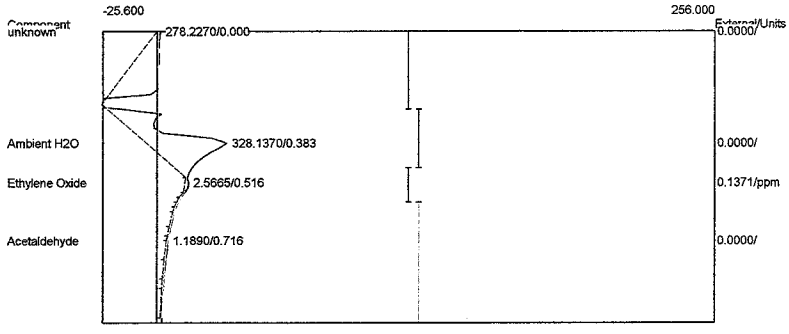
Component	Retention	Area	External	Units
Dead Vol / Air	0.016	291.1760	0.0000	
Ambient H2O	0.383	325.2935	0.0000	
Ethylene Oxide	0.533	3.7210	0.1987	ppm
Acetaldehyde	0.700	1.5820	0.0000	
		621.7725	0.1987	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: BV-Run#3
Analysis date: 12/10/2021 10:55:18
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-3B03.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



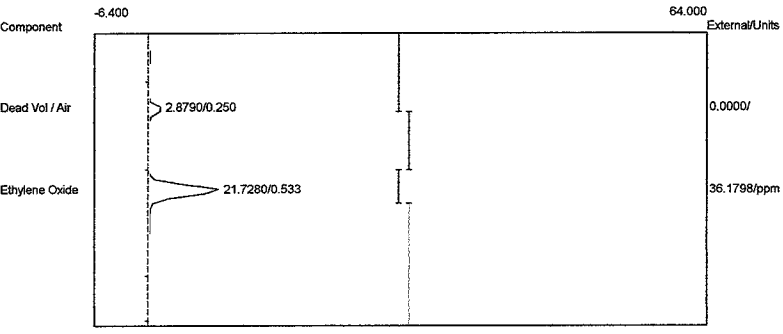
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	2.8915	0.0000	
Ethylene Oxide	0.533	26.7425	44.5295	ppm
		29.6340	44.5295	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: BV-Run#3
Analysis date: 12/10/2021 10:55:18
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-3B03.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



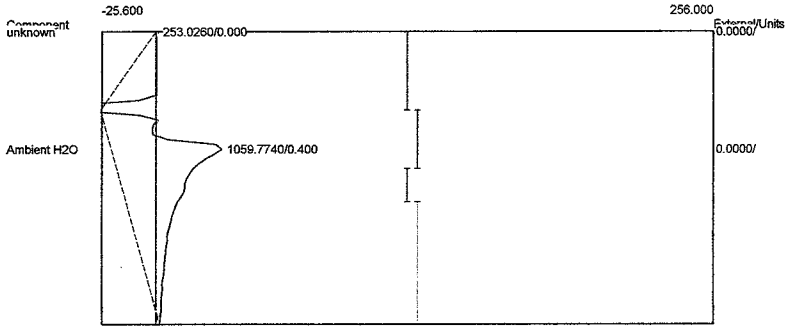
Component	Retention	Area	External	Units
Ambient H2O	0.383	328.1370	0.0000	
Ethylene Oxide	0.516	2.5665	0.1371	ppm
Acetaldehyde	0.716	1.1890	0.0000	
		331.8925	0.1371	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: BV-Run#3
Analysis date: 12/10/2021 10:56:32
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-3B04.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



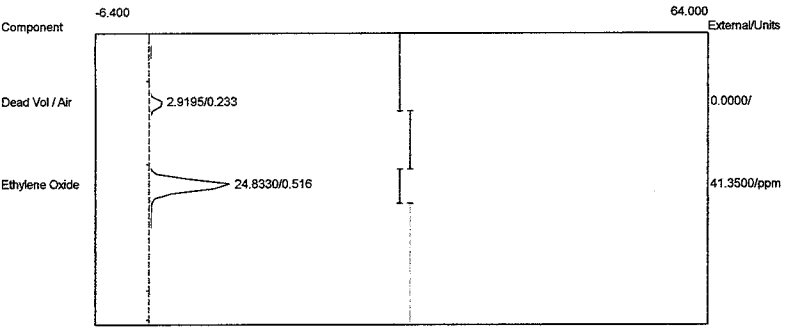
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	2.8790	0.0000	
Ethylene Oxide	0.533	21.7280	36.1798	ppm
		24.6070	36.1798	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: BV-Run#3
Analysis date: 12/10/2021 10:56:32
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-3B04.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



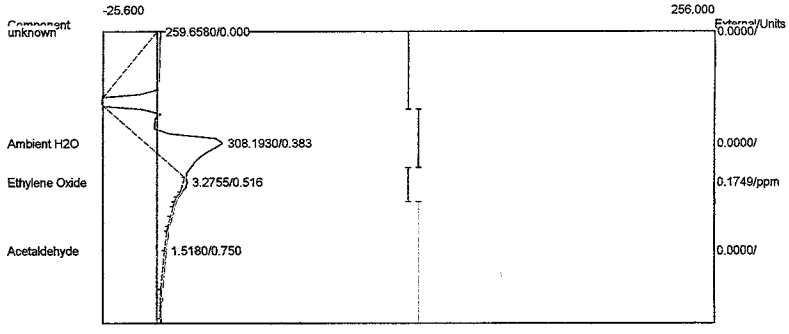
Component	Retention	Area	External	Units
Ambient H2O	0.400	1059.7740	0.0000	
		1059.7740	0.0000	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: BV-Run#3
Analysis date: 12/10/2021 10:57:35
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-3B05.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



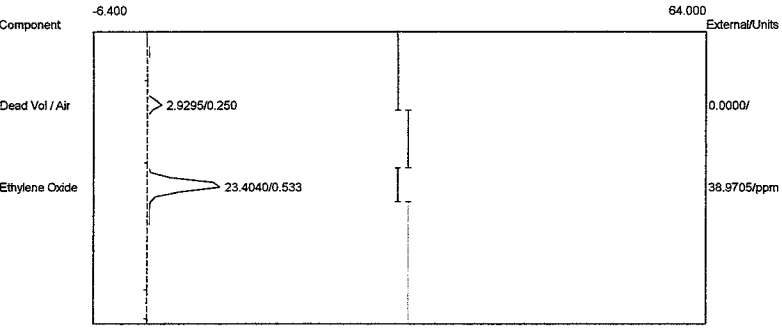
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.9195	0.0000	
Ethylene Oxide	0.516	24.8330	41.3500	ppm
		27.7525	41.3500	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: BV-Run#3
Analysis date: 12/10/2021 10:57:35
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-3B05.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



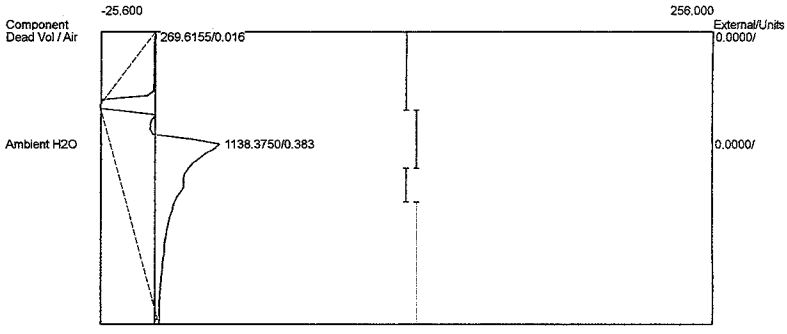
Component	Retention	Area	External	Units
Ambient H2O	0.383	308.1930	0.0000	
Ethylene Oxide	0.516	3.2755	0.1749	ppm
Acetaldehyde	0.750	1.5180	0.0000	
		312.9865	0.1749	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: BV-Run#3
Analysis date: 12/10/2021 10:59:05
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-3B06.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



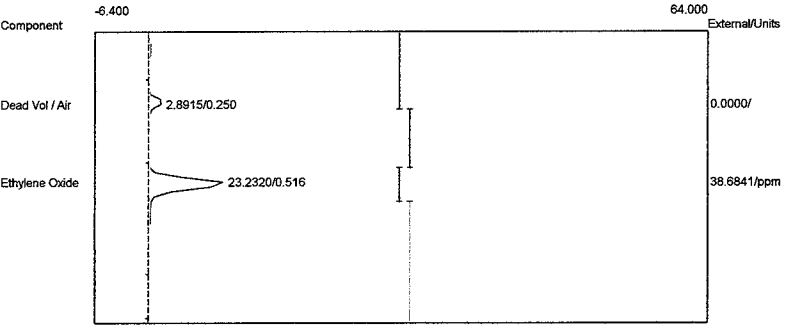
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	2.9295	0.0000	
Ethylene Oxide	0.533	23.4040	38.9705	ppm
		26.3335	38.9705	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: BV-Run#3
Analysis date: 12/10/2021 10:59:05
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-3B06.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



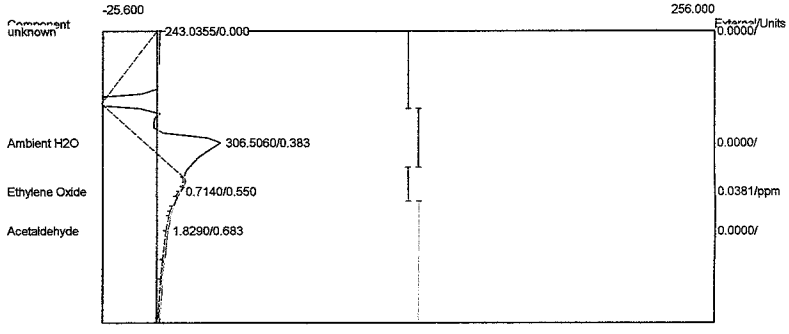
Component	Retention	Area	External	Units
Dead Vol / Air	0.016	269.6155	0.0000	
Ambient H2O	0.383	1138.3750	0.0000	
		1407.9905	0.0000	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: BV-Run#3
Analysis date: 12/10/2021 11:00:09
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-3B07.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



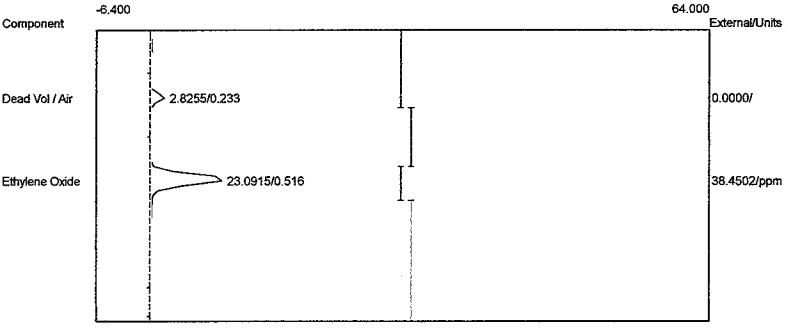
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	2.8915	0.0000	
Ethylene Oxide	0.516	23.2320	38.6841	ppm
		26.1235	38.6841	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: BV-Run#3
Analysis date: 12/10/2021 11:00:09
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-3B07.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



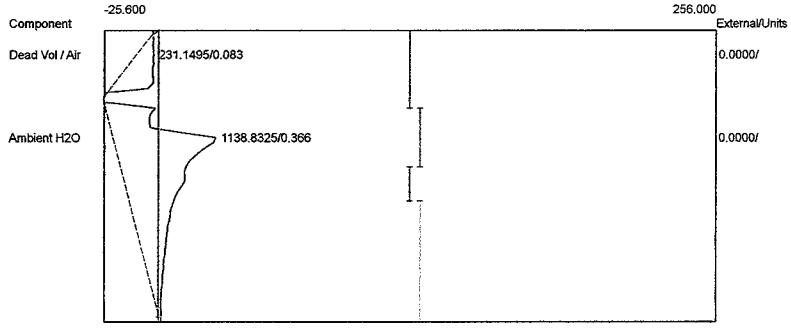
Component	Retention	Area	External	Units
Ambient H2O	0.383	306.5060	0.0000	
Ethylene Oxide	0.550	0.7140	0.0381	ppm
Acetaldehyde	0.683	1.8290	0.0000	
		309.0490	0.0381	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: BV-Run#3
Analysis date: 12/10/2021 11:02:43
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-3B08.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



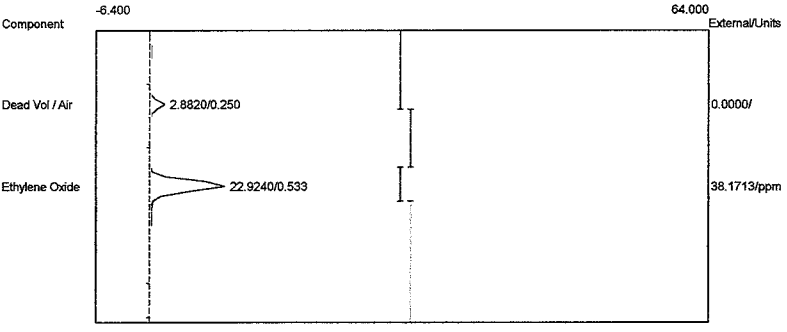
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.8255	0.0000	
Ethylene Oxide	0.516	23.0915	38.4502	ppm
		25.9170	38.4502	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: BV-Run#3
Analysis date: 12/10/2021 11:02:43
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-3B08.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



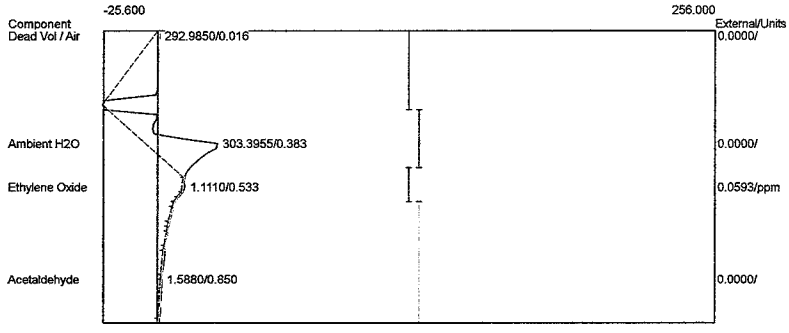
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	231.1495	0.0000	
Ambient H2O	0.366	1138.8325	0.0000	
		1369.9820	0.0000	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: BV-Run#3
Analysis date: 12/10/2021 11:03:46
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-3B09.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



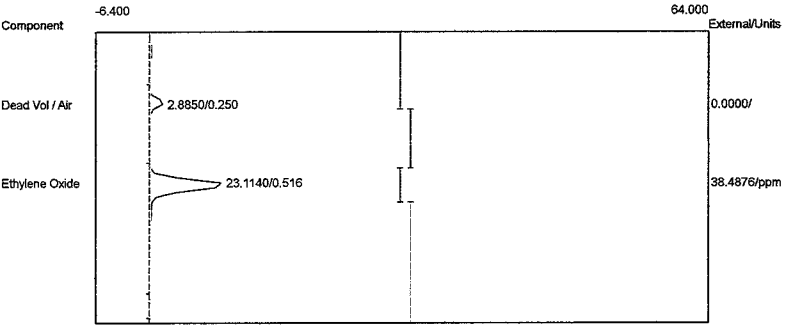
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	2.8820	0.0000	
Ethylene Oxide	0.533	22.9240	38.1713	ppm
		25.8060	38.1713	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: BV-Run#3
Analysis date: 12/10/2021 11:03:46
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-3B09.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



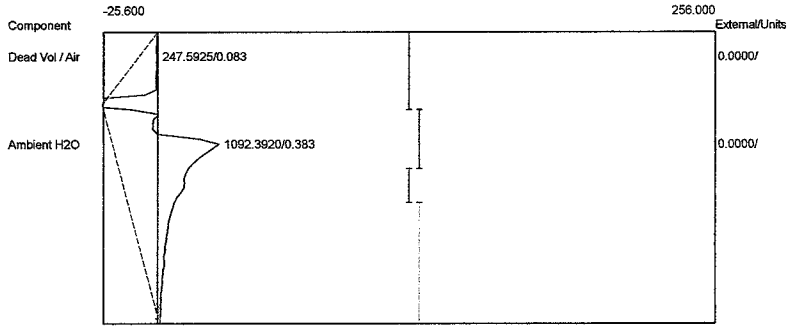
Component	Retention	Area	External	Units
Dead Vol / Air	0.016	292.9850	0.0000	
Ambient H2O	0.383	303.3955	0.0000	
Ethylene Oxide	0.533	1.1110	0.0593	ppm
Acetaldehyde	0.850	1.5880	0.0000	
		599.0795	0.0593	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: BV-Run#3
Analysis date: 12/10/2021 11:04:59
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-3B10.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



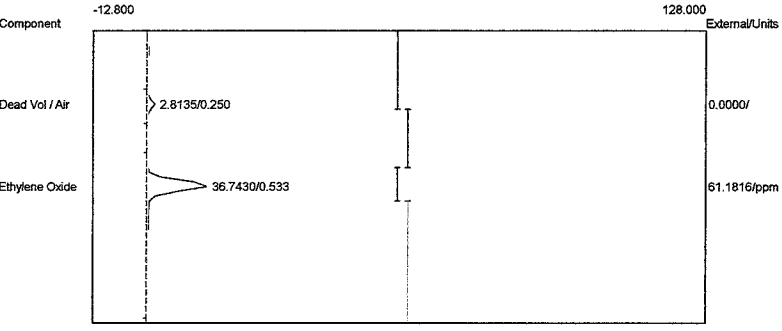
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	2.8850	0.0000	
Ethylene Oxide	0.516	23.1140	38.4876	ppm
		25.9990	38.4876	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: BV-Run#3
Analysis date: 12/10/2021 11:04:59
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-3B10.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



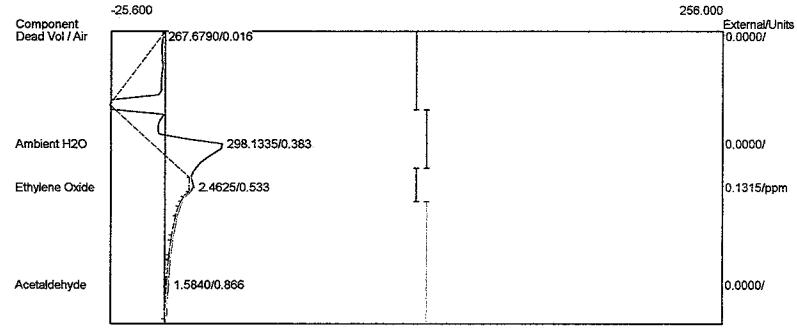
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	247.5925	0.0000	
Ambient H2O	0.383	1092.3920	0.0000	
		1339.9845	0.0000	

Lab name: ECSI
Client: Sterigenics - Charlotte, NC
Client ID: BV-Run#3
Analysis date: 12/10/2021 11:07:36
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-3B12.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



Component	Retention	Area	External	Units
Dead Vol / Air	0.250	2.8135	0.0000	
Ethylene Oxide	0.533	36.7430	61.1816	ppm
		39.5565	61.1816	

Lab name: ECSI
Client: Sterigenics - Queensbury
Client ID: BV-Run#3
Analysis date: 12/10/2021 11:07:36
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-3B12.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer

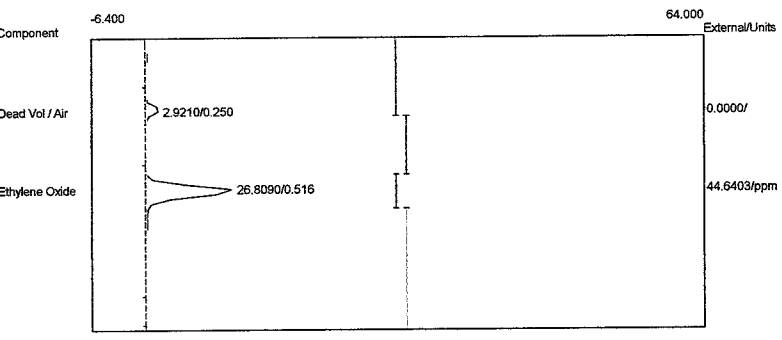


Component	Retention	Area	External	Units
Dead Vol / Air	0.016	267.6790	0.0000	
Ambient H2O	0.383	298.1335	0.0000	
Ethylene Oxide	0.533	2.4625	0.1315	ppm
Acetaldehyde	0.866	1.5840	0.0000	
		569.8590	0.1315	

APPENDIX F

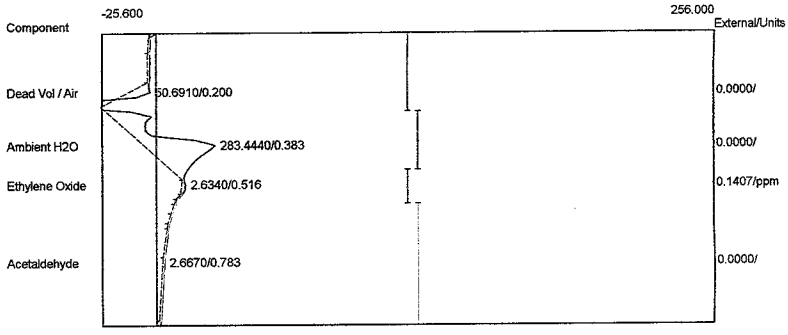
Run #2 Chromatograms – Aeration

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: Aer-Run#2
Analysis date: 12/10/2021 11:09:02
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-2A01.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



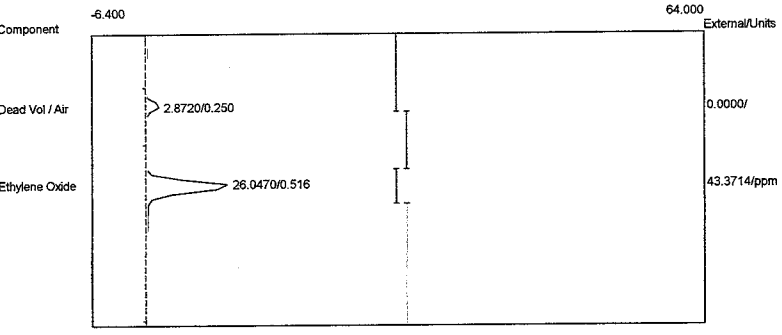
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	2.9210	0.0000	
Ethylene Oxide	0.516	26.8090	44.6403	ppm
		29.7300	44.6403	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: Aer-Run#2
Analysis date: 12/10/2021 11:09:02
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-2A01.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



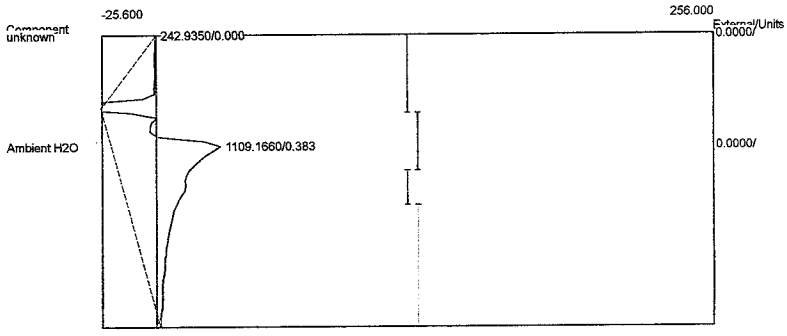
Component	Retention	Area	External	Units
Dead Vol / Air	0.200	50.6910	0.0000	
Ambient H2O	0.383	283.4440	0.0000	
Ethylene Oxide	0.516	2.6340	0.1407	ppm
Acetaldehyde	0.783	2.6670	0.0000	
		339.4360	0.1407	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: Aer-Run#2
Analysis date: 12/10/2021 11:14:39
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-2A02.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



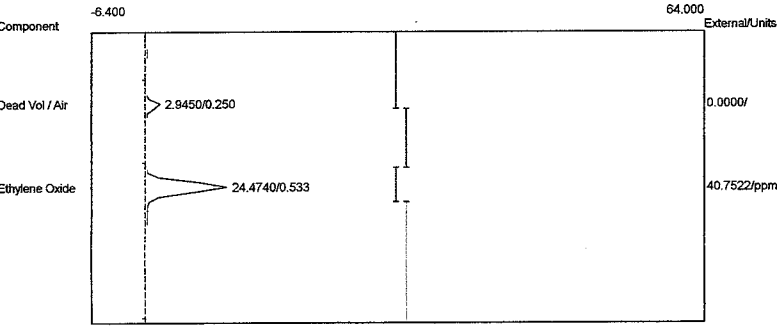
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	2.8720	0.0000	
Ethylene Oxide	0.516	26.0470	43.3714	ppm
		28.9190	43.3714	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: Aer-Run#2
Analysis date: 12/10/2021 11:14:39
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-2A02.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



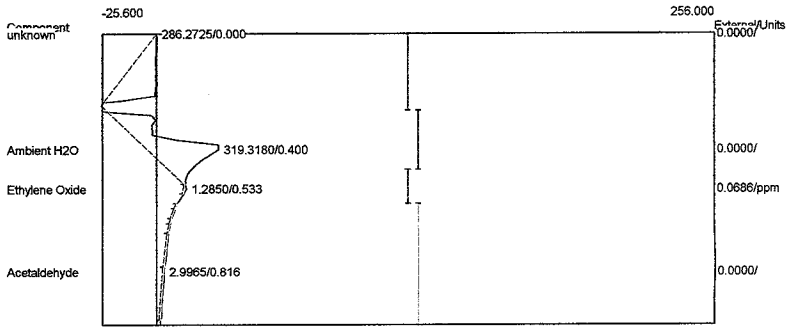
Component	Retention	Area	External	Units
Ambient H2O	0.383	1109.1660	0.0000	
		1109.1660	0.0000	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: Aer-Run#2
Analysis date: 12/10/2021 11:19:04
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-2A03.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



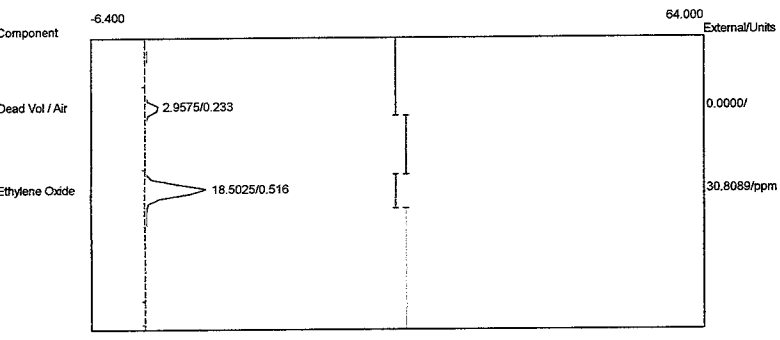
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	2.9450	0.0000	
Ethylene Oxide	0.533	24.4740	40.7522	ppm
		27.4190	40.7522	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: Aer-Run#2
Analysis date: 12/10/2021 11:19:04
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-2A03.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



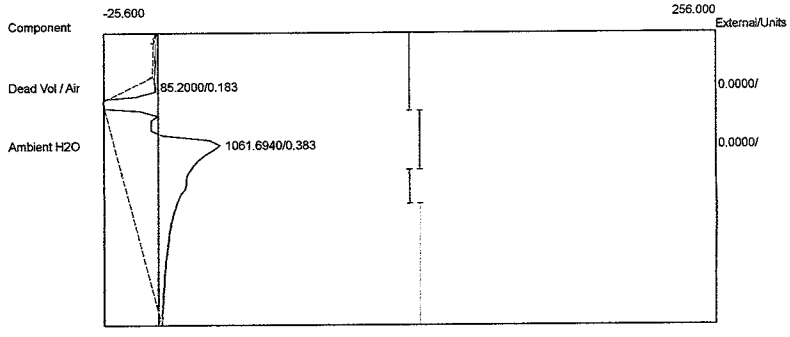
Component	Retention	Area	External	Units
Ambient H2O	0.400	319.3180	0.0000	
Ethylene Oxide	0.533	1.2850	0.0686	ppm
Acetaldehyde	0.816	2.9965	0.0000	
		323.5995	0.0686	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: Aer-Run#2
Analysis date: 12/10/2021 11:24:05
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-2A04.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



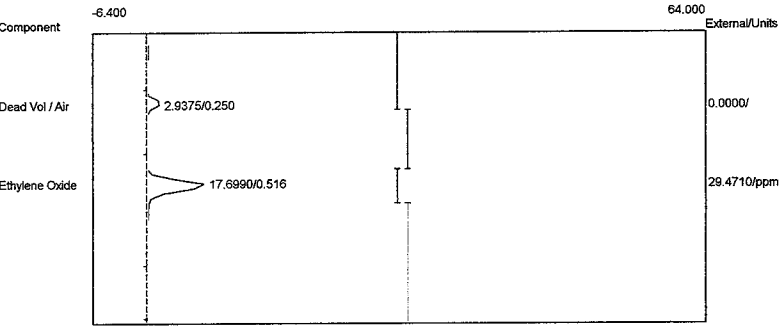
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.9575	0.0000	
Ethylene Oxide	0.516	18.5025	30.8089	ppm
		21.4600	30.8089	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: Aer-Run#2
Analysis date: 12/10/2021 11:24:05
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-2A04.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



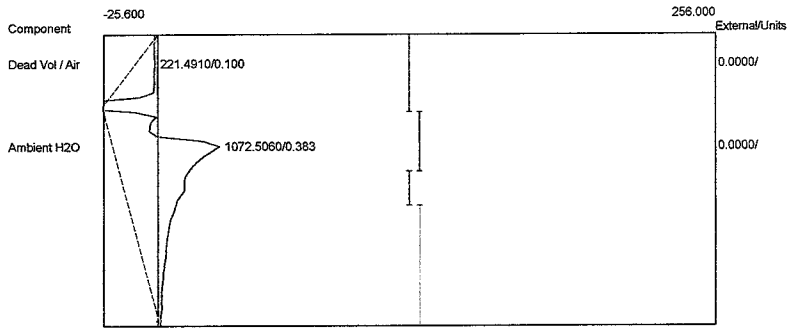
Component	Retention	Area	External	Units
Dead Vol / Air	0.183	85.2000	0.0000	
Ambient H2O	0.383	1061.6940	0.0000	
		1146.8940	0.0000	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: Aer-Run#2
Analysis date: 12/10/2021 11:29:12
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-2A05.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



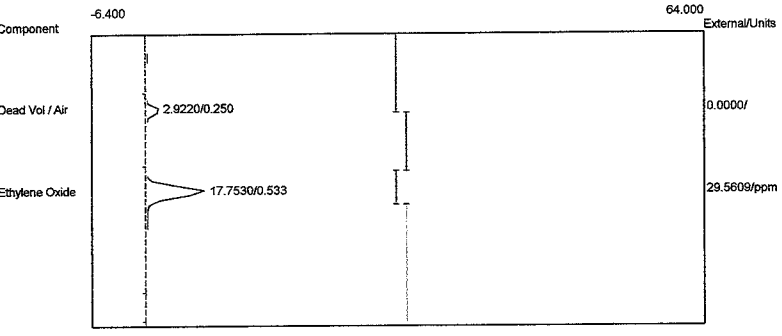
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	2.9375	0.0000	
Ethylene Oxide	0.516	17.6990	29.4710	ppm
		20.6365	29.4710	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: Aer-Run#2
Analysis date: 12/10/2021 11:29:12
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-2A05.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



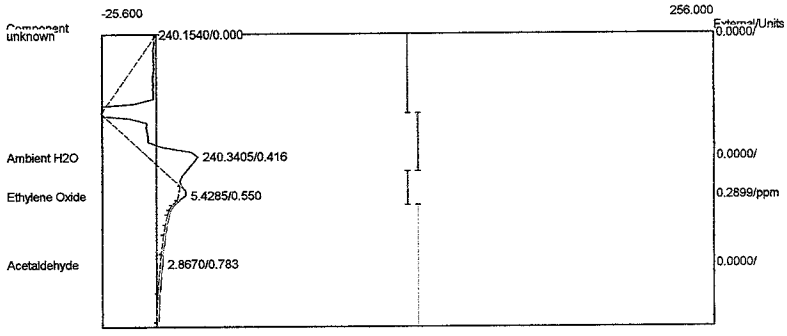
Component	Retention	Area	External	Units
Dead Vol / Air	0.100	221.4910	0.0000	
Ambient H2O	0.383	1072.5060	0.0000	
		1293.9970	0.0000	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: Aer-Run#2
Analysis date: 12/10/2021 11:34:46
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-2A06.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



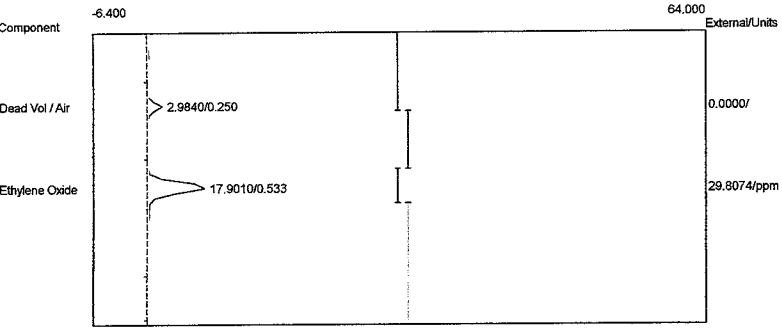
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	2.9220	0.0000	
Ethylene Oxide	0.533	17.7530	29.5609	ppm
		20.6750	29.5609	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: Aer-Run#2
Analysis date: 12/10/2021 11:34:46
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-2A06.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



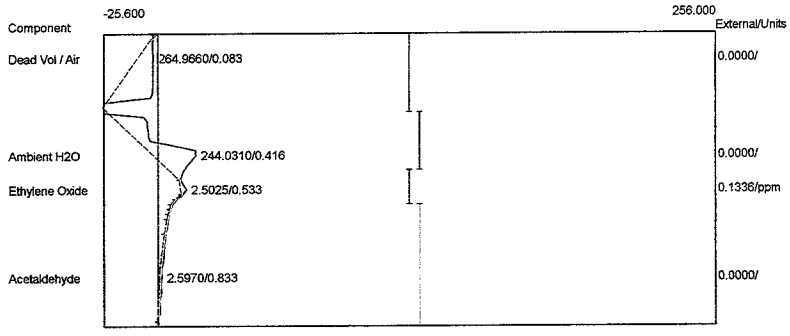
Component	Retention	Area	External	Units
Ambient H2O	0.416	240.3405	0.0000	
Ethylene Oxide	0.550	5.4285	0.2899	ppm
Acetaldehyde	0.783	2.8670	0.0000	
		248.6360	0.2899	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: Aer-Run#2
Analysis date: 12/10/2021 11:39:46
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-2A07.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



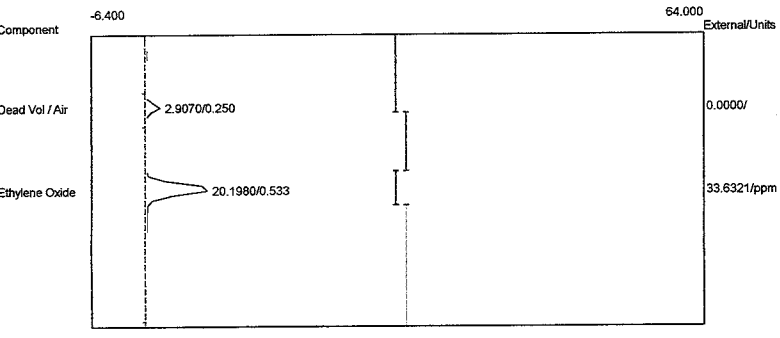
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	2.9840	0.0000	
Ethylene Oxide	0.533	17.9010	29.8074	ppm
		20.8850	29.8074	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: Aer-Run#2
Analysis date: 12/10/2021 11:39:46
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-2A07.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



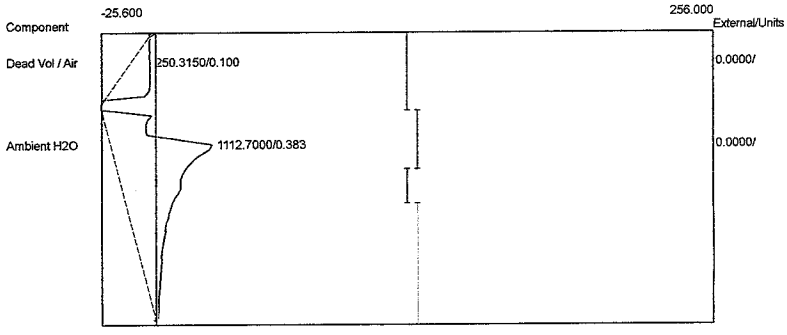
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	264.9660	0.0000	
Ambient H2O	0.416	244.0310	0.0000	
Ethylene Oxide	0.533	2.5025	0.1336	ppm
Acetaldehyde	0.833	2.5970	0.0000	
		514.0965	0.1336	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: Aer-Run#2
Analysis date: 12/10/2021 11:44:32
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-2A08.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



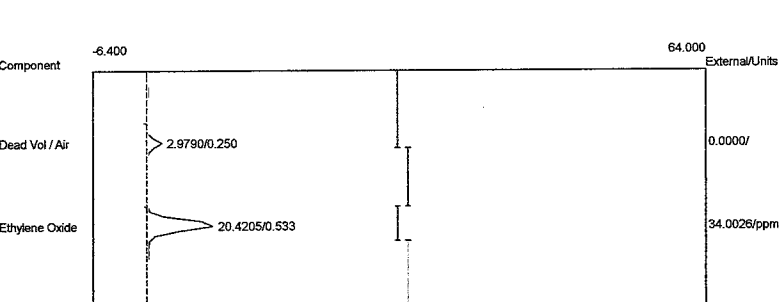
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	2.9070	0.0000	
Ethylene Oxide	0.533	20.1980	33.6321	ppm
		23.1050	33.6321	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: Aer-Run#2
Analysis date: 12/10/2021 11:44:32
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-2A08.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



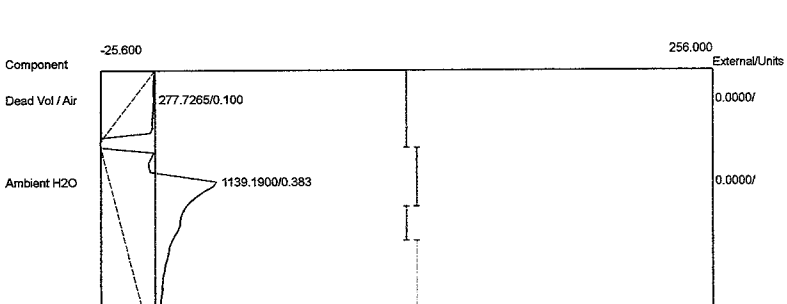
Component	Retention	Area	External	Units
Dead Vol / Air	0.100	250.3150	0.0000	
Ambient H2O	0.383	1112.7000	0.0000	
		1363.0150	0.0000	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: Aer-Run#2
Analysis date: 12/10/2021 11:49:41
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-2A09.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



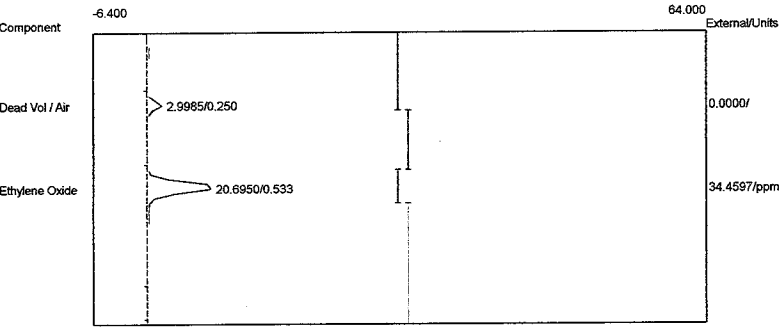
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	2.9790	0.0000	
Ethylene Oxide	0.533	20.4205	34.0026	ppm
		23.3995	34.0026	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: Aer-Run#2
Analysis date: 12/10/2021 11:49:41
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-2A09.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



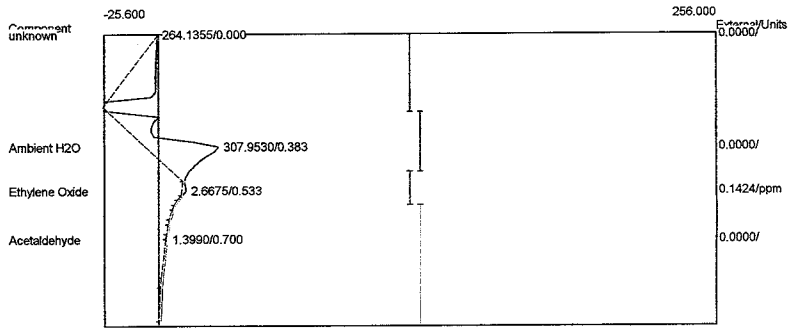
Component	Retention	Area	External	Units
Dead Vol / Air	0.100	277.7265	0.0000	
Ambient H2O	0.383	1139.1900	0.0000	
		1416.9165	0.0000	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: Aer-Run#2
Analysis date: 12/10/2021 11:54:59
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-2A10.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



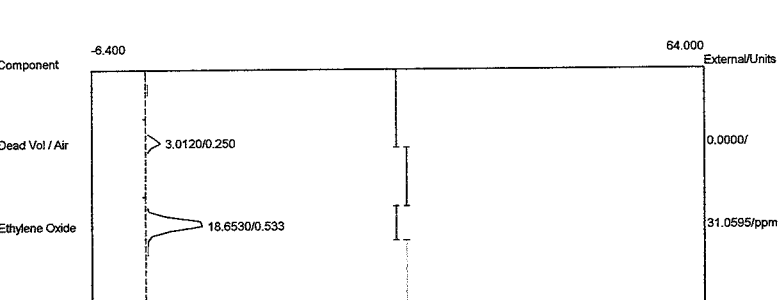
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	2.9985	0.0000	
Ethylene Oxide	0.533	20.6950	34.4597	ppm
		23.6935	34.4597	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: Aer-Run#2
Analysis date: 12/10/2021 11:54:59
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-2A10.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



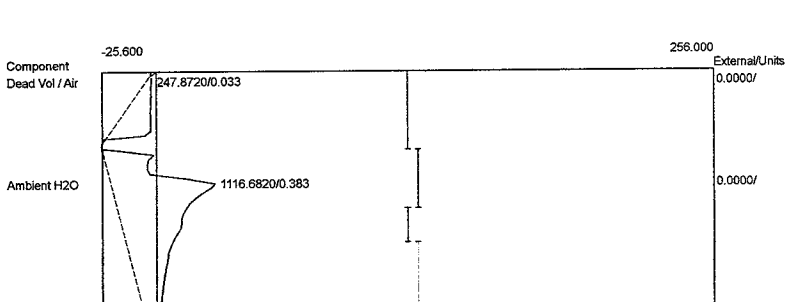
Component	Retention	Area	External	Units
Ambient H2O	0.383	307.9530	0.0000	
Ethylene Oxide	0.533	2.6675	0.1424	ppm
Acetaldehyde	0.700	1.3990	0.0000	
		312.0195	0.1424	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: Aer-Run#2
Analysis date: 12/10/2021 11:59:05
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-2A11.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



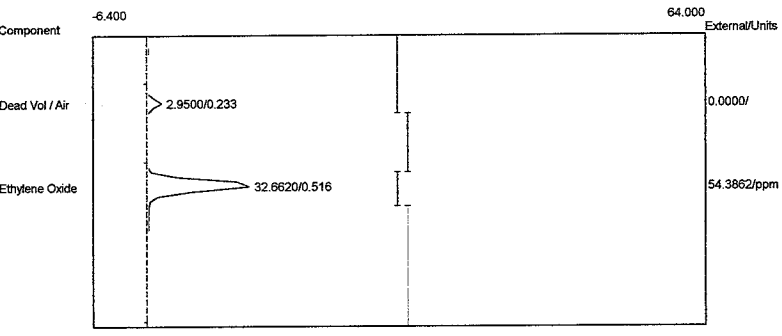
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	3.0120	0.0000	
Ethylene Oxide	0.533	18.6530	31.0595	ppm
		21.6650	31.0595	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: Aer-Run#2
Analysis date: 12/10/2021 11:59:05
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-2A11.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



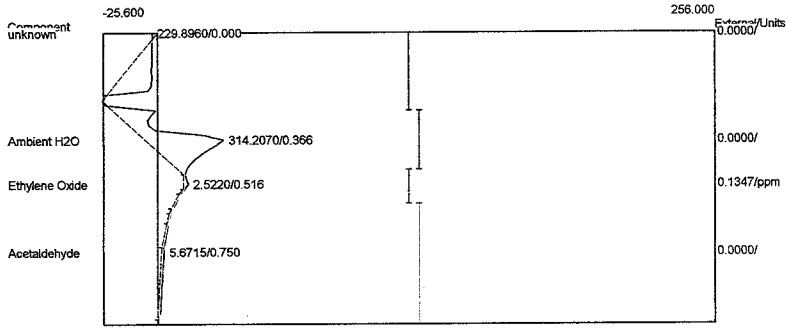
Component	Retention	Area	External	Units
Dead Vol / Air	0.033	247.8720	0.0000	
Ambient H2O	0.383	1116.6820	0.0000	
		1364.5540	0.0000	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: Aer-Run#2
Analysis date: 12/10/2021 12:04:59
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-2A12.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.9500	0.0000	
Ethylene Oxide	0.516	32.6620	54.3862	ppm
		35.6120	54.3862	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: Aer-Run#2
Analysis date: 12/10/2021 12:04:59
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-2A12.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer

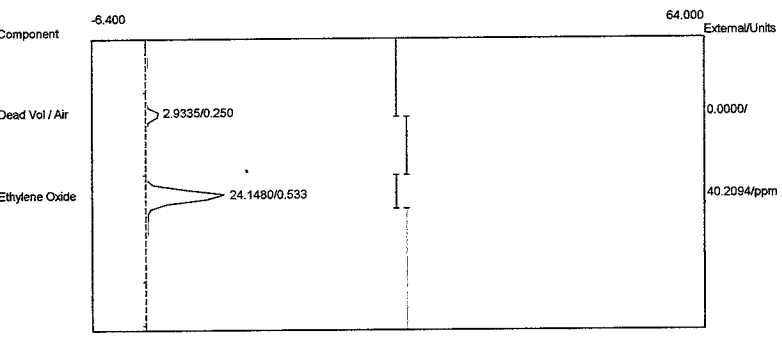


Component	Retention	Area	External	Units
Ambient H2O	0.366	314.2070	0.0000	
Ethylene Oxide	0.516	2.5220	0.1347	ppm
Acetaldehyde	0.750	5.6715	0.0000	
		322.4005	0.1347	

APPENDIX G

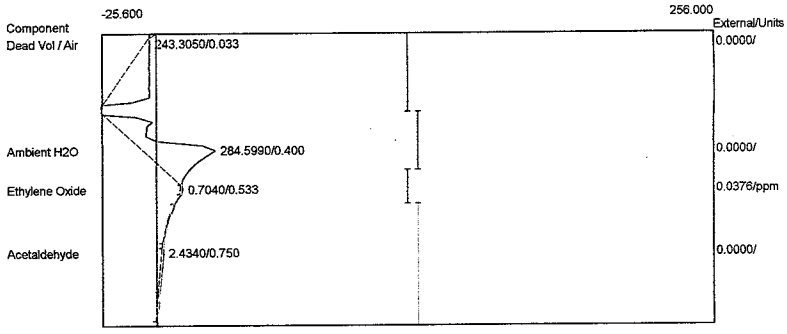
Run #3 Chromatograms – Aeration

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: Aer-Run#3
Analysis date: 12/10/2021 12:09:34
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-3A01.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



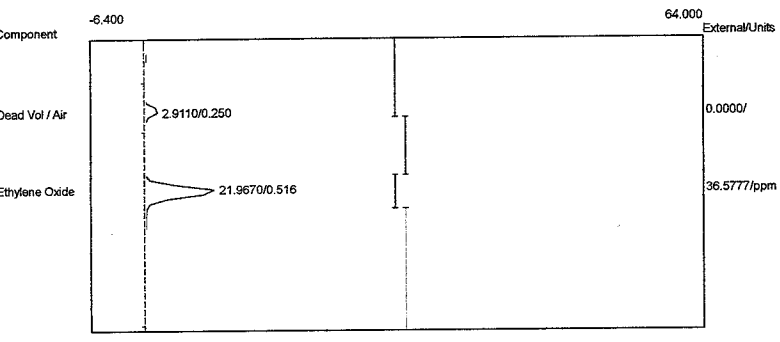
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	2.9335	0.0000	
Ethylene Oxide	0.533	24.1480	40.2094	ppm
		27.0815	40.2094	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: Aer-Run#3
Analysis date: 12/10/2021 12:09:34
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-3A01.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



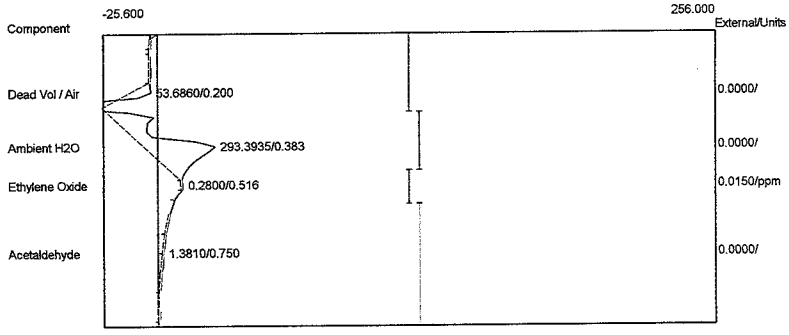
Component	Retention	Area	External	Units
Dead Vol / Air	0.033	243.3050	0.0000	
Ambient H2O	0.400	284.5990	0.0000	
Ethylene Oxide	0.533	0.7040	0.0376	ppm
Acetaldehyde	0.750	2.4340	0.0000	
		531.0420	0.0376	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: Aer-Run#3
Analysis date: 12/10/2021 12:14:18
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-3A02.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



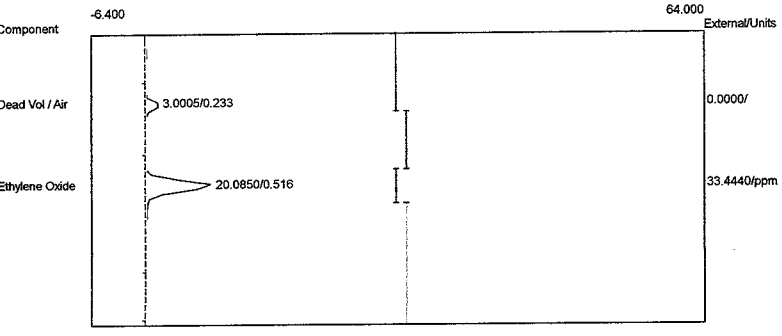
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	2.9110	0.0000	
Ethylene Oxide	0.516	21.9670	36.5777	ppm
		24.8780	36.5777	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: Aer-Run#3
Analysis date: 12/10/2021 12:14:18
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-3A02.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



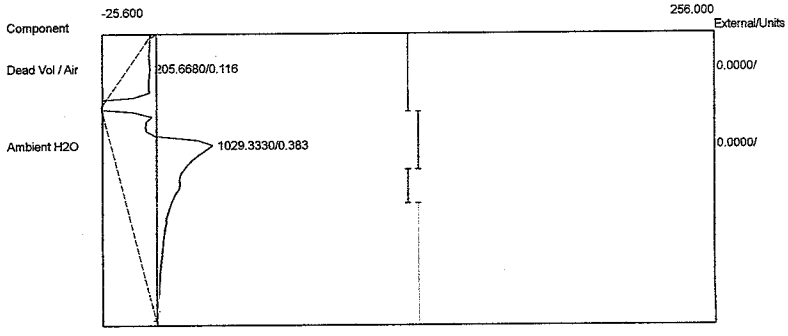
Component	Retention	Area	External	Units
Dead Vol / Air	0.200	53.6860	0.0000	
Ambient H2O	0.383	293.3935	0.0000	
Ethylene Oxide	0.516	0.2800	0.0150	ppm
Acetaldehyde	0.750	1.3810	0.0000	
		348.7405	0.0150	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: Aer-Run#3
Analysis date: 12/10/2021 12:19:26
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-3A03.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



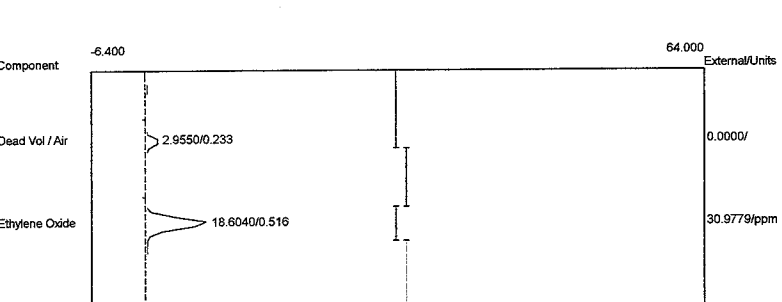
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	3.0005	0.0000	
Ethylene Oxide	0.516	20.0850	33.4440	ppm
		23.0855	33.4440	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: Aer-Run#3
Analysis date: 12/10/2021 12:19:26
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-3A03.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



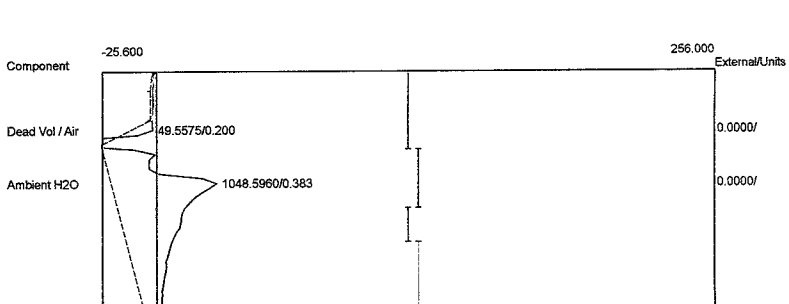
Component	Retention	Area	External	Units
Dead Vol / Air	0.116	205.6680	0.0000	
Ambient H2O	0.383	1029.3330	0.0000	
		1235.0010	0.0000	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: Aer-Run#3
Analysis date: 12/10/2021 12:24:47
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-3A04.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



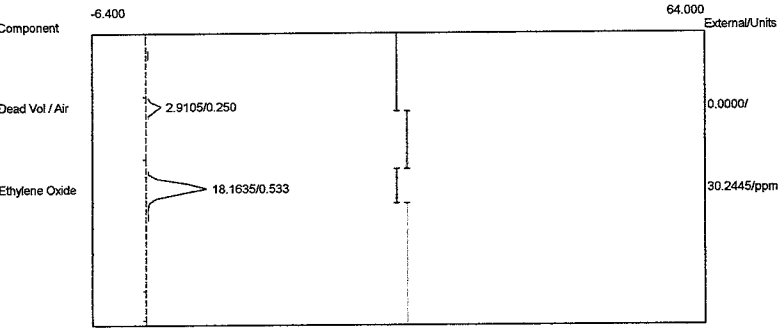
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.9550	0.0000	
Ethylene Oxide	0.516	18.6040	30.9779	ppm
		21.5590	30.9779	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: Aer-Run#3
Analysis date: 12/10/2021 12:24:47
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-3A04.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



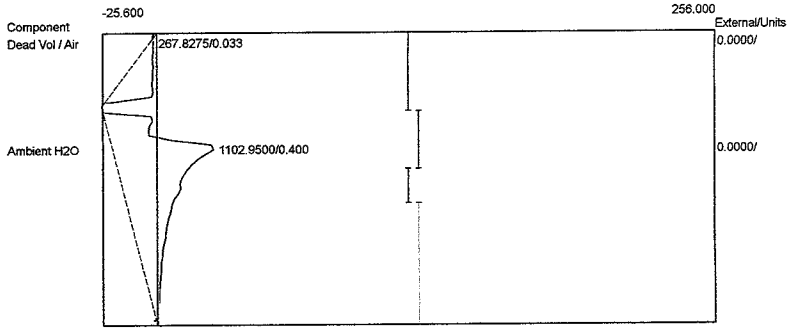
Component	Retention	Area	External	Units
Dead Vol / Air	0.200	49.5575	0.0000	
Ambient H2O	0.383	1048.5960	0.0000	
		1098.1535	0.0000	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: Aer-Run#3
Analysis date: 12/10/2021 12:29:08
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-3A05.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



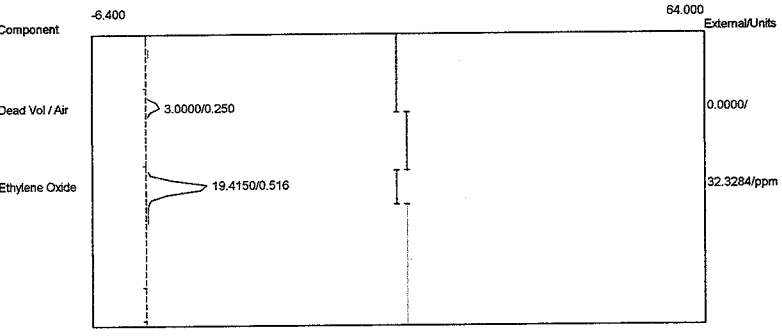
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	2.9105	0.0000	
Ethylene Oxide	0.533	18.1635	30.2445	ppm
		21.0740	30.2445	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: Aer-Run#3
Analysis date: 12/10/2021 12:29:08
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-3A05.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



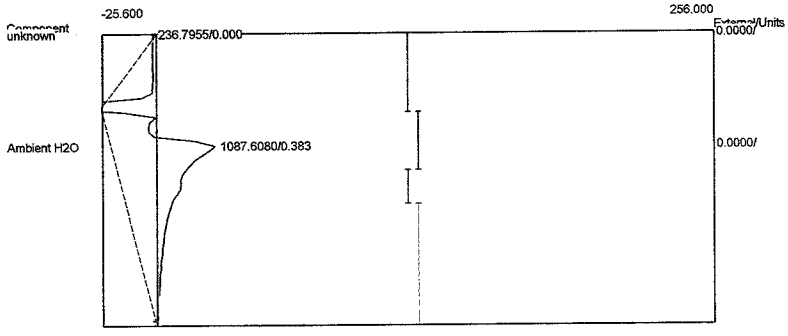
Component	Retention	Area	External	Units
Dead Vol / Air	0.033	267.8275	0.0000	
Ambient H2O	0.400	1102.9500	0.0000	
		1370.7775	0.0000	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: Aer-Run#3
Analysis date: 12/10/2021 12:34:27
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-3A06.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



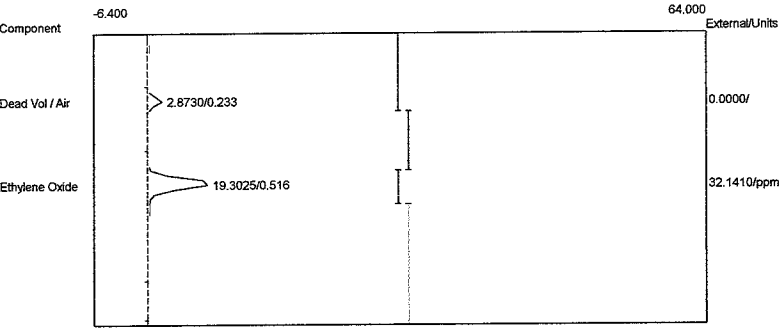
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	3.0000	0.0000	
Ethylene Oxide	0.516	19.4150	32.3284	ppm
		22.4150	32.3284	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: Aer-Run#3
Analysis date: 12/10/2021 12:34:27
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-3A06.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



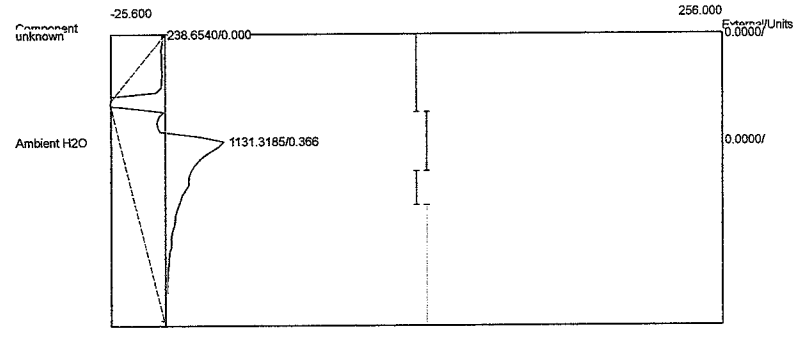
Component	Retention	Area	External	Units
Ambient H2O	0.383	1087.6080	0.0000	
		1087.6080	0.0000	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: Aer-Run#3
Analysis date: 12/10/2021 12:39:38
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-3A07.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



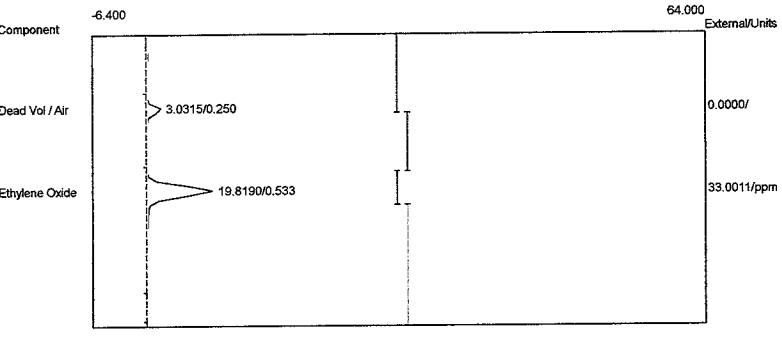
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.8730	0.0000	
Ethylene Oxide	0.516	19.3025	32.1410	ppm
		22.1755	32.1410	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: Aer-Run#3
Analysis date: 12/10/2021 12:39:38
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-3A07.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



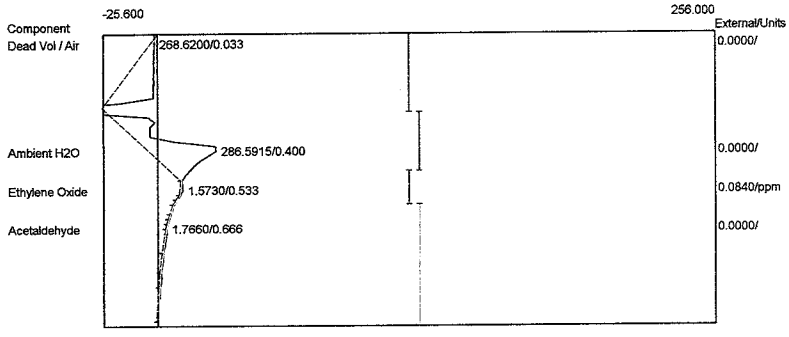
Component	Retention	Area	External	Units
Ambient H2O	0.366	1131.3185	0.0000	
		1131.3185	0.0000	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: Aer-Run#3
Analysis date: 12/10/2021 12:44:46
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-3A08.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



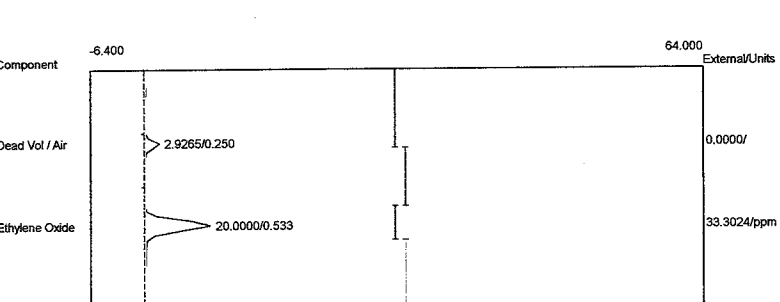
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	3.0315	0.0000	
Ethylene Oxide	0.533	19.8190	33.0011	ppm
		22.8505	33.0011	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: Aer-Run#3
Analysis date: 12/10/2021 12:44:46
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-3A08.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



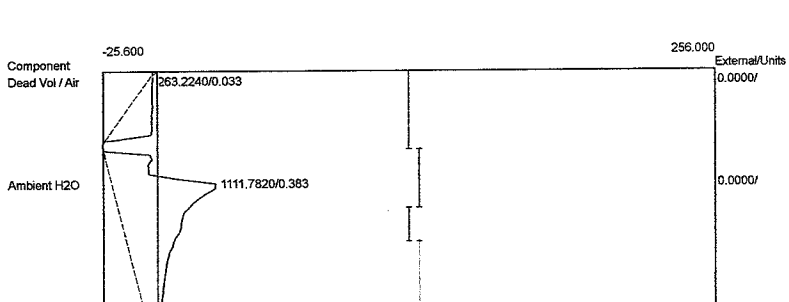
Component	Retention	Area	External	Units
Dead Vol / Air	0.033	268.6200	0.0000	
Ambient H2O	0.400	286.5915	0.0000	
Ethylene Oxide	0.533	1.5730	0.0840	ppm
Acetaldehyde	0.666	1.7660	0.0000	
		558.5505	0.0840	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: Aer-Run#3
Analysis date: 12/10/2021 12:49:21
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-3A09.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



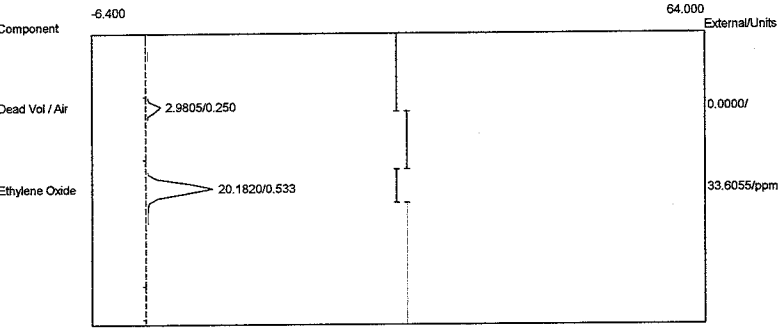
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	2.9265	0.0000	
Ethylene Oxide	0.533	20.0000	33.3024	ppm
		22.9265	33.3024	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: Aer-Run#3
Analysis date: 12/10/2021 12:49:21
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-3A09.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



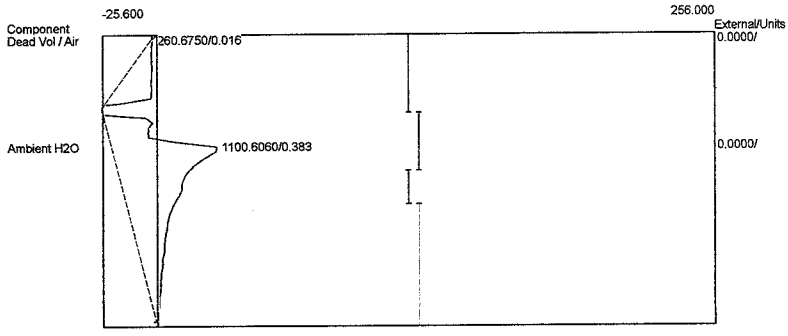
Component	Retention	Area	External	Units
Dead Vol / Air	0.033	263.2240	0.0000	
Ambient H2O	0.383	1111.7820	0.0000	
		1375.0060	0.0000	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: Aer-Run#3
Analysis date: 12/10/2021 12:54:03
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-3A10.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



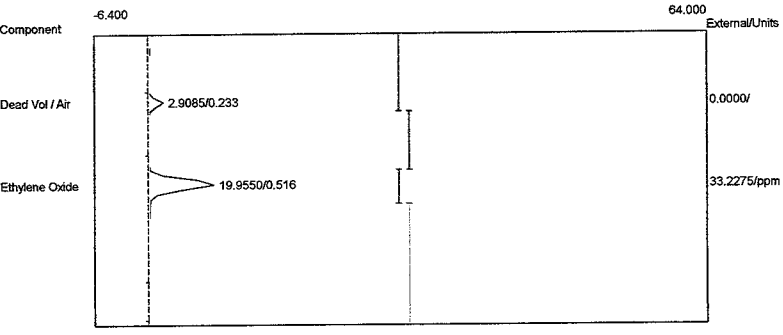
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	2.9805	0.0000	
Ethylene Oxide	0.533	20.1820	33.6055	ppm
		23.1625	33.6055	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: Aer-Run#3
Analysis date: 12/10/2021 12:54:03
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-3A10.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



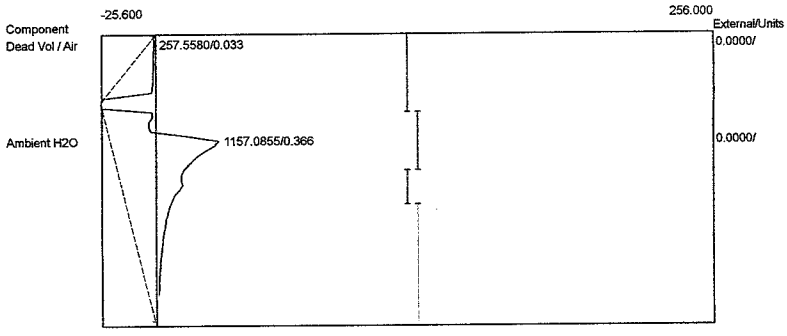
Component	Retention	Area	External	Units
Dead Vol / Air	0.016	260.6750	0.0000	
Ambient H2O	0.383	1100.6060	0.0000	
		1361.2810	0.0000	

Lab name: ECSi
Client: Sterigenics - Charlotte, NC
Client ID: Aer-Run#3
Analysis date: 12/10/2021 12:59:10
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterQ2021-3A11.CHR (c:\peak359)
Sample: Abator Inlet
Operator: D. Kremer



Component	Retention	Area	External	Units
Dead Vol / Air	0.233	2.9085	0.0000	
Ethylene Oxide	0.516	19.9550	33.2275	ppm
		22.8635	33.2275	

Lab name: ECSi
Client: Sterigenics - Queensbury
Client ID: Aer-Run#3
Analysis date: 12/10/2021 12:59:10
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterQ2021-3A11.CHR (c:\peak359)
Sample: Abator Outlet
Operator: D. Kremer



Component	Retention	Area	External	Units
Dead Vol / Air	0.033	257.5580	0.0000	
Ambient H2O	0.366	1157.0855	0.0000	
		1414.6435	0.0000	

APPENDIX H

Gas Certifications

PRAXAIR
Making our planet more productive

Praxair Distribution, Inc.
ISO 9001 Registered
37256 Highway 30
Geismar, LA 70734
Tel: 225-677-7700
Fax: 225-673-3531

Customer & Order Information:

PRAXAIR PKG SANTA ANA CA HPS
1545 E EDINGER AVE,
SANTA ANA, CA 92705-4907

Praxair Order Number: **71418069**
Customer PO Number: **79410708**

Certificate Issuance Date: **8/5/2020**

Certification Date: **8/5/2020**
Lot Number: **70340 0217 6D**
Part Number: **NI EO1MP-A3**
DocNumber: **237283**
Expiration Date: **8/5/2022**

CERTIFICATE OF ANALYSIS

Primary Standard

Component	Requested Concentration (Molar)	Certified Concentration (Molar)	Analytical Reference	Analytical Uncertainty
Ethylene oxide	**1 ppm**	**1.08 ppm**	**1**	**± 5 %**
Nitrogen	**Balance**	**Balance**		

Cylinder Style: **A3**
Cylinder Pressure @ 70 F: **2000 psig**
Cylinder Volume: **27.5 ft3**
Valve Outlet Connection: **CGA 350**
Cylinder Number(s): **FF63980**

Fill Date: **8/4/2020**
Analysis Date: **8/5/2020**

Filling Method: **Gravimetric**

Analyst: **Ronnie Popularas**

QA Reviewer: **Kristen Hanna**

Key to Analytical Techniques:

Reference	Analytical Instrument - Analytical Principle
1	Hewlett-Packard 6890 - Gas Chromatography with FID

The gas calibration cylinder standard prepared by Praxair Distribution, Inc. is considered a certified standard. It is prepared by gravimetric, volumetric, or partial pressure techniques. The calibration standard provided is certified against Praxair Distribution, Inc. Reference Materials which are traceable to the International System of Units (SI) through either weights traceable to the National Institute of Standards and Technology (NIST) or Measurement Canada, or through NIST Standard Reference Materials or equivalent where available.

Note: All expressions for concentration (e.g., % or ppm) are for gas phase, by volume (e.g., ppmv) unless otherwise noted. Analytical uncertainty is expressed as a Relative % unless otherwise noted.

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Praxair Distribution. Inc.
ISO 9001 Registered
37256 Highway 30
Geismar, LA 70734
Tel: 225-677-7700
Fax: 225-673-3531

Customer & Order Information:

PRAXAIR PKG SANTA ANA CA HPS
1545 E EDINGER AVE,
SANTA ANA, CA 92705-4907

Praxair Order Number: **71423449**
Customer PO Number: **79416198**

Certificate Issuance Date: **8/20/2020**

Certification Date: **8/20/2020**
Lot Number: **70340 0231 1E**
Part Number: **NI EO10MP-A3**
DocNumber: **240056**
Expiration Date: **8/19/2022**

CERTIFICATE OF ANALYSIS

Primary Standard

Component	Requested Concentration (Molar)	Certified Concentration (Molar)	Analytical Reference	Analytical Uncertainty
Ethylene oxide	**10 ppm**	**10.6 ppm**	**1**	**± 1 %**
Nitrogen	**Balance**	**Balance**		

Cylinder Style: **A3**
Cylinder Pressure @ 70 F: **2000 psig**
Cylinder Volume: **28 ft3**
Valve Outlet Connection: **CGA 350**
Cylinder Number(s): **EA0011733**

Fill Date: **8/18/2020**
Analysis Date: **8/19/2020**

Filling Method: **Gravimetric**

Analyst: **Ronnie Popularas**

QA Reviewer: **Jim Maurin**

Key to Analytical Techniques:

Reference	Analytical Instrument - Analytical Principle
1	Hewlett-Packard 6890 - Gas Chromatography with FID

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Note: All expressions for concentration (e.g., % or ppm) are for gas phase, by volume (e.g., ppmv) unless otherwise noted. Analytical uncertainty is expressed as a Relative % unless otherwise noted.

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37256 Highway 30
Geismar, LA 70734
Tel: 225-677-7700
Fax: 225-673-3531

Customer & Order Information:

PRAXAIR PKG SANTA ANA CA HPS
1545 E EDINGER AVE,
SANTA ANA, CA 92705

Praxair Order Number: **70953858**
Customer PO Number: **Verbal**

Certificate Issuance Date: **4/20/2021**

Certification Date: **4/20/2021**
Lot Number: **70340 9119 1F**
Part Number: **NI EO100P-A3**
DocNumber: **326205**
Expiration Date: **4/20/2023**

CERTIFICATE OF ANALYSIS

Primary Standard

Component	Requested Concentration (Molar)	Certified Concentration (Molar)	Analytical Reference	Analytical Uncertainty
Ethylene oxide		**100 ppm**	**1**	**± 1 %**
Nitrogen		**Balance**		

Cylinder Style: **A3**
Cylinder Pressure @ 70 F: **1800 psig**
Cylinder Volume: **28.7 ft3**
Valve Outlet Connection: **CGA 350**
Cylinder Number(s): **EA0023428**

Fill Date: **Recert.**
Analysis Date: **4/20/2020**

Filling Method: **Gravimetric**

Analyst: **Ronnie Popularas**

QA Reviewer: **Blayne Griffin**

Key to Analytical Techniques:

Reference	Analytical Instrument - Analytical Principle
1	Hewlett-Packard 6890 - Gas Chromatography with FID

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Note: All expressions for concentration (e.g., % or ppm) are for gas phase, by volume (e.g., ppmv) unless otherwise noted. Analytical uncertainty is expressed as a Relative % unless otherwise noted.

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Praxair Distribution, Inc.
ISO 9001 Registered
37256 Highway 30
Geismar, LA 70734
Tel: 225-677-7700
Fax: 225-673-3531

Certificate Issuance Date: **4/7/2020**

Customer & Order Information:

PRAXAIR PKG SANTA ANA CA HPS
1545 E EDINGER AVE,
SANTA ANA, CA 92705-4907

Praxair Order Number: **71317148**
Customer PO Number: **Verbal**

Certification Date: **4/7/2020**
Lot Number: **70340 2517 4F**
Part Number: **NI EO1000P-A3**
DocNumber: **197405**
Expiration Date: **4/7/2022**

CERTIFICATE OF ANALYSIS
Primary Standard

Component	Requested Concentration (Molar)	Certified Concentration (Molar)	Analytical Reference	Analytical Uncertainty
Ethylene oxide		1,000 ppm	1	± 1 %
Nitrogen		Balance		

Cylinder Style: **A3**
Cylinder Pressure @ 70 F: **1100 psig**
Cylinder Volume: **30 ft3**
Valve Outlet Connection: **CGA 350**
Cylinder Number(s): **CLM002810**

Fill Date: **Recert.**
Analysis Date: **4/6/2020**

Filling Method: **Gravimetric**

Analyst: **Ronnie Popularas**

QA Reviewer: **Jim Maurin**

Key to Analytical Techniques:

Reference	Analytical Instrument - Analytical Principle
1	Hewlett-Packard 6890 - Gas Chromatography with FID

The gas calibration cylinder standard prepared by Praxair Distribution, Inc. is considered a certified standard. It is prepared by gravimetric, volumetric, or partial pressure techniques. The calibration standard provided is certified against Praxair Distribution, Inc. Reference Materials which are traceable to the International System of Units (SI) through either weights traceable to the National Institute of Standards and Technology (NIST) or Measurement Canada, or through NIST Standard Reference Materials or equivalent where available.

Note: All expressions for concentration (e.g., % or ppm) are for gas phase, by volume (e.g., ppmv) unless otherwise noted. Analytical uncertainty is expressed as a Relative % unless otherwise noted.

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37256 Highway 30
Geismar, LA 70734
Tel: 225-677-7700
Fax: 225-673-3531

Customer & Order Information:

PRAXAIR PKG SANTA ANA CA HPS
1545 E EDINGER AVE,
SANTA ANA, CA 92705-4907

Praxair Order Number: **71317148**
Customer PO Number: **Verbal**

Certificate Issuance Date: **4/7/2020**

Certification Date: **4/7/2020**
Lot Number: **70340 2517 4F**
Part Number: **NI EO10000P-A3**
DocNumber: **197406**
Expiration Date: **4/7/2022**

CERTIFICATE OF ANALYSIS
Primary Standard

Component	Requested Concentration (Molar)	Certified Concentration (Molar)	Analytical Reference	Analytical Uncertainty
Ethylene oxide		10.100 ppm	1	± 1 %
Nitrogen		Balance		

Cylinder Style: **A3**
Cylinder Pressure @ 70 F: **600 psig**
Cylinder Volume: **30 ft3**
Valve Outlet Connection: **CGA 350**
Cylinder Number(s): **CLM005787**

Fill Date: **Recert.**
Analysis Date: **4/6/2020**

Filling Method: **Gravimetric**

Analyst: **Ronnie Popularas**

QA Reviewer: **Jim Maurin**

Key to Analytical Techniques:

Reference	Analytical Instrument - Analytical Principle
1	Hewlett-Packard 6890 - Gas Chromatography with FID

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Note: All expressions for concentration (e.g., % or ppm) are for gas phase, by volume (e.g., ppmv) unless otherwise noted. Analytical uncertainty is expressed as a Relative % unless otherwise noted.

CERTIFICATE OF ANALYSIS

Customer Name:	Environmental Compliance Specialists, Inc	**Cylinder Number:**	CAL-4448
Stock / Analyzer Tag #:	A006-1040-50PNC	**Product Class**	Certified Standard
Customer Reference:	Verbal Dan	**Cylinder Contents (1):**	28 CF @ 2000 PSI
MESA Reference:	124691	**Cylinder CGA:**	A006-HP-350/BR
Date of Certification:	4/21/2021	**Analysis Method:**	GC-TCD
Recommended Shelf Life:	2 Years	**Preparation Method:**	Gravimetric

Component	**Requested Concentration (2)**	**Reported Concentration (2,3)**
Ethylene Oxide	50 ppm	52 ppm
Nitrogen	Balance	Balance

Authorized Signature: _____

(1) The fill pressure shown on the COA is as originally quoted. The fill pressure measured by the customer may differ from the fill pressure originally quoted due to temperature effects, compressibility of the individual components when blended together in the cylinder, gauge accuracy or reduction in content volume before shipping as a result of samples withdrawn for laboratory QC necessary to ensure product quality.
(2) Unless otherwise stated, concentrations are given in molar units.
(3) Vapor pressure mixes are blended at a sufficiently low pressure so as to eliminate phase separation under most low temperature conditions encountered during transport or storage. However, it is generally recommended that cylinders containing vapor pressure restricted mixes be placed on the floor in a horizontal position and rolled back and forth to improve homogeneity of the gas phase mixture before being put into service.

Analytical Gas Standards are prepared and analyzed using combinations of NIST traceable weights, SRM's provided by NIST, or internal gas standards that have been verified for accuracy using procedures published by the US-EPA. Pure gases are analyzed and certified for purity using minor component Analytical Gas Standards prepared according to the methods specified above. Balances are calibrated to NIST test weights covered by NIST test number 822/278982-10. Reference Certification #'s:1072/Z, 833/AB and 3280/H.
Calibration methods are in conformance with MIL-STD 45662A.

MESA Specialty Gases & Equipment
division of MESA International Technologies, Inc.
2427 S. Anne St. • Santa Ana, California 92704 • USA
TEL: 714-434-7102 • FAX: 714-434-8006 • E-mail: mail@mesagas.com
On-line Catalog at www.mesagas.com